



Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

**ILNAS-EN 61851-24:2014**

**Electric vehicle conductive charging  
system - Part 24: Digital  
communication between a d.c. EV  
charging station and an electric vehicle**

Konduktive Ladesysteme für  
Elektrofahrzeuge - Teil 24: Digitale  
Kommunikation zwischen einer  
Gleichstromladestation für

Système de charge conductive pour  
véhicules électriques - Partie 24:  
Communication digitale entre la borne  
de charge à courant continu et le

**05/2014**



## National Foreword

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English Version

**Electric vehicle conductive charging system - Part 24: Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging (IEC 61851-24:2014)**

Système de charge conductive pour véhicules électriques -  
Partie 24: Communication digitale entre la borne de charge  
à courant continu et le véhicule électrique pour le contrôle  
de la charge à courant continu  
(CEI 61851-24:2014)

Konduktive Ladesysteme für Elektrofahrzeuge - Teil 24:  
Digitale Kommunikation zwischen einer  
Gleichstromladestation für Elektrofahrzeuge und dem  
Elektrofahrzeug zur Steuerung des  
Gleichstromladevorgangs  
(IEC 61851-24:2014)

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 69/273/FDIS, future edition 1 of IEC 61851-24, prepared by IEC/TC 69 "Electric road vehicles and electric industrial trucks" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61851-24:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-01-11
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-04-11

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## Endorsement notice

The text of the International Standard IEC 61851-24:2014 was approved by CENELEC as a European Standard without any modification.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When 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](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61851-1	2010	Electric vehicle conductive charging system - Part 1: General requirements	EN 61851-1	2011
IEC 61851-23	2014	Electric vehicle conductive charging system - Part 23: D.C. electric vehicle charging station	EN 61851-23	2013
ISO/IEC 15118-1		Road vehicles – Vehicle to grid communication interface - Part 1: General information and use-case definition	-	-
ISO/IEC 15118-2		Road vehicles – Vehicle to grid communication interface - Part 2: Technical protocol description and open systems interconnections (OSI) layer requirements	-	-
ISO/IEC 15118-3		Road vehicles - Vehicle to grid communication - interface - Part 3 Physical layer requirements	-	-
ISO 11898-1	2003	Road vehicles - Controller area network (CAN) - Part 1: Data link layer and physical signalling	-	-
ISO 11898-2	2003	Road vehicles - Controller area network (CAN) - Part 2: High-speed medium access unit	-	-

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
COMMISSION ÉLECTROTECHNIQUE INTERNATIONALEIEC 61851-24  
Edition 1.0 2014-03IEC 61851-24  
Édition 1.0 2014-03ELECTRIC VEHICLE CONDUCTIVE  
CHARGING SYSTEM –SYSTÈME DE CHARGE CONDUCTIVE POUR  
VÉHICULES ÉLECTRIQUES –Part 24: Digital communication between a d.c. EV  
charging station and an electric vehicle for  
control of d.c. chargingPartie 24: Communication digitale entre la borne  
de charge à courant continu et le véhicule  
électrique pour le contrôle de la charge  
à courant continu

## CORRIGENDUM 1

Corrections to the French version appear after the English text.

Les corrections à la version française sont données après le texte anglais.

**2 Normative references**

Add the footnote "1 To be published."

**3.2  
parameter**

*This correction applies to the French text only.*

**5 Digital communication architecture**

*This correction applies to the French text only.*

**Table A.1 – Communication actions and parameters during d.c. charging control process between system A station and vehicle**

*This correction applies to the French text only.*

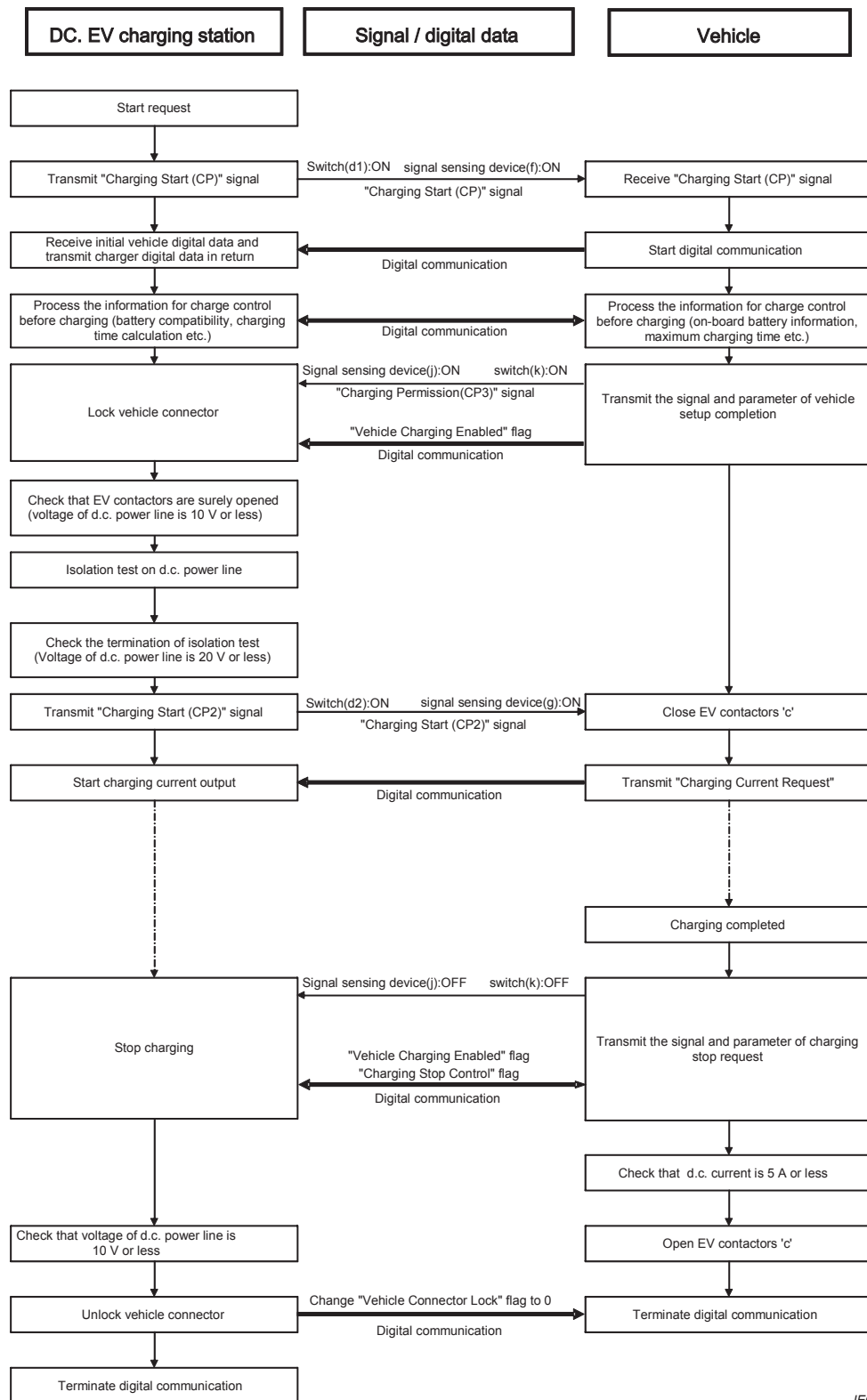
**Figure A.1 – Sequence diagram of d.c. charging control communication for system A**

Replace "less than 10 V" by "10 V or less".

Replace "less than 20 V" by "20 V or less".

Replace "less than 5 A" by "5 A or less".

As follows:



IEC

For symbols, see Table AA.1 of IEC 61851-23:2014.

**Figure A.1 – Sequence diagram of d.c. charging control communication for system A**

**Table A.2 – Exchanged parameter during d.c. charging control process between system A station and vehicle (1 of 4)**

Replace the resolution (range) in the 2nd row "0,11 kWh/bit" by "0,1 kWh/bit".

Replace the resolution (range) in the 3rd row, "1 % bit, 100 % (fixed)" by "1 %/bit (100 %: fixed)".

Add the data update rate "100 ms" in the 5th row.

As follows:

**Table A.2 – Exchanged parameter during d.c. charging control process between system A station and vehicle (1 of 4)**

Item in Table 1	Parameter	Content	CAN ID ID.byte(bit)	Source	Destination	Data update rate	Unit	Status flag	Resolution (range)
b-2	Maximum battery voltage	The maximum voltage value at the vehicle inlet terminals, at which the station stops charging to protect the vehicle battery	H'100.4, H'100.5	EV	System A station	100 ms	V	-	1 V/bit
	Rated capacity of battery	Rated capacity of battery	H'101.5, H'101.6	EV	System A station	100 ms	kWh	-	0,1 kWh/bit
	Constant of charging rate indication	Fixed value for charging rate indication, which is the maximum charging rate (100 %) of vehicle battery	H'100.6	EV	System A station	100 ms	%		1 %/bit (100 %: fixed)
	Maximum charging time (set by 10 s)	Maximum charging time permitted by EV, set by 10 s	H'101.1	EV	System A station	100 ms	s	-	10 s/bit (0 to 2 540 s)
	Maximum charging time (set by minute)	Maximum charging time permitted by EV, set by minute	H'101.2	EV	System A station	100 ms	min		1 min/bit (0 to 255 min)
	Estimated charging time	Estimated remaining time before the end of charging calculated by EV	H'101.3	EV	System A station	100 ms	min	-	1 min/bit (0 to 254 min)
b-1	Control protocol number	Software version of control protocol to which EV corresponds	H'102.0	EV	System A station	100 ms		-	1/bit (0 to 255)
	Target battery voltage	Targeted charging voltage at the vehicle inlet terminals	H'102.1, H'102.2	EV	System A station	100 ms	V	-	1 V/bit (0 to 600 V)
a-1	Charging-current-request	Current value requested by EV during charging	H'102.3	EV	System A station	100 ms	A	-	1 A/bit (0 to 255 A)

**A.5.3 Transmission**

Replace the reference to "Table A.1" by "Table A.2".

**C.1 General**

Replace the reference to "DIN 70121" by "DIN SPEC 70121".





# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Electric vehicle conductive charging system –  
Part 24: Digital communication between a d.c. EV charging station and an  
electric vehicle for control of d.c. charging**

**Système de charge conductive pour véhicules électriques –  
Partie 24: Communication digitale entre la borne de charge à courant continu et  
le véhicule électrique pour le contrôle de la charge à courant continu**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC VEHICLE CONDUCTIVE CHARGING SYSTEM –****Part 24: Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging**

## FOREWORD

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International Standard IEC 61851-24 has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.

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

FDIS	Report on voting
69/273FDIS	69/280/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 61851 series, published under the general title *Electric vehicle conductive charging system*, 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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## INTRODUCTION

The introduction and commercialisation of electric vehicles has been accelerated in the global market, responding to the global concerns on CO<sub>2</sub> reduction and energy security. Concurrently, the development of charging infrastructure for electric vehicles has also been expanding. As supplementary system of a.c. charging system, d.c. charging is recognized as an effective solution to extend the available range of electric vehicles, and different d.c. charging systems are being used over the world. The international standardization in terms of charging infrastructure including d.c. charging systems is indispensable for the diffusion of electric vehicles, and this standard is developed for the manufacturers' convenience by providing general specifications for control communication protocols between off-board d.c. charger and electric vehicles.