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Road vehicles - Vehicle to grid communication interface - Part 10: Physical layer and data link layer requirements for single-pair Ethernet (ISO 15118-10:2025)

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. 05/25

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 15118-10**

March 2025

ICS 43.120

English Version

**Road vehicles - Vehicle to grid communication interface -  
Part 10: Physical layer and data link layer requirements  
for single-pair Ethernet (ISO 15118-10:2025)**

Véhicules routiers - Interface de communication entre  
véhicule et réseau électrique - Partie 10: Exigences  
relatives à la couche physique et à la couche liaison de  
données pour Ethernet à paire unique (ISO 15118-  
10:2025)

Straßenfahrzeuge - Kommunikationsschnittstelle  
zwischen Fahrzeug und Ladestation - Teil 10:  
Anforderungen an die physikalische Schicht und  
Sicherungsschicht für Zweidraht Ethernet (ISO 15118-  
10:2025)

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

**EN ISO 15118-10:2025 (E)**

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## **European foreword**

This document (EN ISO 15118-10:2025) has been prepared by Technical Committee ISO/TC 22 "Road vehicles" in collaboration with Technical Committee CEN/TC 301 "Road vehicles" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2025, and conflicting national standards shall be withdrawn at the latest by September 2025.

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

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## **Endorsement notice**

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# International Standard

**ISO 15118-10**

## Road vehicles — Vehicle to grid communication interface —

### Part 10: Physical layer and data link layer requirements for single-pair Ethernet

*Véhicules routiers — Interface de communication entre véhicule  
et réseau électrique —*

*Partie 10: Exigences relatives à la couche physique et à la couche  
liaison de données pour Ethernet à paire unique*

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## ISO 15118-10:2025(en)



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**ISO 15118-10:2025(en)****Foreword**

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, SC 31, *Data communication*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 301, *Road vehicles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 15118 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).



**ISO 15118-10:2025(en)**

## **Introduction**

The looming energy crisis and necessity to reduce greenhouse gas emissions has forced vehicle manufacturers to find ways to scale down how much energy their vehicles consume. The vehicles they are currently developing are propelled either entirely or in part by electric energy. If this energy is generated from renewable sources, this will weaken dependency on oil, improve the global energy efficiency and cut CO<sub>2</sub> emissions. However, a dedicated charging infrastructure is needed to charge the batteries that power these vehicles.

Much of the standardization work on dimensional and electrical specifications of the charging infrastructure and the vehicle interface is already treated in the relevant ISO or IEC groups. However, the question of information transfer between the electric vehicles (EV) and electric vehicle supply equipment (EVSE) has not been treated sufficiently.

This communication is key to optimizing energy resources and energy production systems so vehicles can be charged cheaply and efficiently.

In this document, messages are exchanged between the vehicle and the infrastructure over single-pair Ethernet (which is embedded in the cable assembly).

The relevant information on use-case definitions requirements can be found in ISO 15118-1. Network and application protocol requirements can be found in ISO 15118-20, respectively.

# Road vehicles — Vehicle to grid communication interface —

## Part 10:

## Physical layer and data link layer requirements for single-pair Ethernet

### 1 Scope

This document specifies the physical and data link layer of high-level communication (HLC) between electric vehicles (EV) and electric vehicle supply equipment (EVSE) based on single-pair Ethernet communication. Single-pair Ethernet communication uses differential twisted pair wires that are dedicated and balanced. This document applies to 10BASE-T1S only.

This document covers the overall information exchange between all actors involved in electrical energy exchange. The ISO 15118 series applies to charging between EV and EVSE.

### 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.

ISO 15118-20:2022, *Road vehicles — Vehicle to grid communication interface — Part 20: 2nd generation network layer and application layer requirements*

IEC 61851-23-3<sup>1)</sup>, *Electric vehicle conductive charging system — Part 23-3: DC electric vehicle supply equipment for Megawatt charging systems*

IEEE 802.3:2022, *IEEE Standard for Ethernet*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**

1) Under preparation. Stage at the time of publication: IEC/CCDV 61851-23-3:2025.