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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 17748-3

Intelligent transport systems — Energy-based green ITS services for smart city mobility applications via nomadic and mobile devices —

Part 3: Data exchange requirements for electric vehicle (EV)-based demand response charging services

*Systèmes de transport intelligents - Services STI écologiques
basés sur l'énergie pour les applications de mobilité des villes
intelligentes via des dispositifs nomades et mobiles —*

*Partie 3: Exigences en matière d'échange de données pour les
services de recharge à la demande des véhicules électriques (VE)*

ICS: 35.240.60; 13.020.20

This document is circulated as received from the committee secretariat.

ISO/TC 204

Secretariat: **ANSI**

Voting begins on:
2025-04-30

Voting terminates on:
2025-07-23

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 documents 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).

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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.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

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.

Introduction

Renewable energy sources in electric power system have been increasing in order to overcome the climate crisis all over the world and these resources are distributed nationwide compared to the traditional concentrated electric power generation sources. Cities have been getting smarter thanks to information and communication technologies and getting bigger since urbanization rates, which is share of populations living in urban area, are rapidly increasing. The number of eco-friendly electric vehicle in transportation sector is also growing. These changes make the efficient use of electric energy very pivotal in the cities, especially smart cities which have to take climate actions to reach carbon neutrality. Based on the assumption that cities could operate energy management system for electric power system, this standard defines data exchange requirements to support Electric Vehicle(EV)-based Demand Response(DR) services utilizing nomadic devices in the smart cities. In this standard, two types of EV-based DR services will be considered. One is to reduce demand when the event in the grid side occurs due to the shortage of reserve or due to the environmental issues like fine dust(not to operate coal-fired power plant which generate fine dust). In this case, EV owners who receive demand reduction request message from DR service provider using nomadic devices may stop charging EVs or lower charging load of EVs which are currently being charged. The other is to increase demand when the imbalance event in the grid side is forecasted day ahead due to over-generation of electric power produced by renewable energy sources. In this case, EV owners who receive demand increase request message from DR service provider may go to the specified charging station and charge their EVs during the specified time period. These services interworking energy and transportation sector will contribute to make cities safer, more comfortable and more sustainable.

Intelligent transport systems — Energy-based green ITS services for smart city mobility applications via nomadic and mobile devices —

Part 3:

Data exchange requirements for electric vehicle (EV)-based demand response charging services

1 Scope

This standard specifies the data exchange requirements between related systems within smart city for EV-based DR services utilizing nomadic devices as follows:

- EV-based DR service for demand reduction, called “demand response” during the shortage of reserve on electric grid or in response to fine dust warning issued according to air quality forecast
- EV-based DR for demand increase, called “reverse demand response”, instead of curtailment during excess electricity generation by renewable energy sources such as the sun and wind

This standard defines the requirements of main actors such as EV, nomadic device, smart city cloud, charging station and service provider to support EV-based DR services.

This standard also defines data set and data processing procedure requirements for EV-based DR services.

2 Normative references

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

ISO GUIDE 84:2020(E), Guidelines for addressing climate change in standards

IEC 61851-1:2017, *Electric vehicle conductive charging system — Part 1: General requirements*

IEC 62325, *Energy market communications, based on the Common Information Model*

IEC 62746, *Systems interface between customer energy management system and the power management system*

IEC 62746-10-1:2018, *Systems interface between customer energy management system and the power management system - Part 10-1: Open automated demand response*

IEC 61968, *Application integration at electric utilities - System interfaces for distribution management*

IEC 61968-100, *Application integration at electric utilities - System interfaces for distribution management - Part 100: Implementation profiles*

IEC 61968-9, *Application integration at electric utilities - System interfaces for distribution management - Part 9: Interfaces for meter reading and control*

IEC 62055-31:2022, *Electricity metering - Payment systems - Part 31: Particular requirements - Static payment meters for active energy (classes 0,5, 1 and 2)*

ISO/IEC 15067-3-3, *Information technology — Home Electronic System (HES) application model — Part 3-3: Model of a system of interacting Energy Management Agents (EMAs) for demand response energy management*

ISO 15118-2:2014, *Road vehicles — Vehicle-to-Grid Communication Interface — Part 2: Network and application protocol requirements*

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

DIN SPEC 70121:2014-12, *Electromobility - Digital communication between a d.c. EV charging station and an electric vehicle for control of d.c. charging in the Combined Charging System*

Open Charge Point Protocol, OCPP 1.6, 2015. Open Charge Alliance (OCA)

Open Charge Point Protocol, OCPP 2.0.1, 2018. Open Charge Alliance (OCA)

3 Terms and definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Terms and definitions

3.1.1

payment meter

electricity meter with additional functionality that can be operated and controlled to allow the flow of energy according to agreed payment modes

3.1.2

customer baseline load

CBL

the pattern of electric demand as usual, is needed to measure performance of DR program

3.1.3

DR meter

the meter installed by the service provider to measure load amount of the customer.

3.1.4

electric vehicle supply equipment

EVSE

equipment or a combination of equipment, providing dedicated functions to supply electric energy from a fixed electrical installation or supply network to an EV for the purpose of power transfer.

3.1.5

EV based DR service

DR activity by which the cost of charging electric vehicles is modified to cause consumers to shift consumption patterns

3.1.6

load increase amount

The difference between the customer normal load and the actual power consumption by transaction time when customers participating in reverse DR

3.1.7**load reduction amount**

difference between the customer normal load and the actual amount of electricity used by transaction time when customers participating in reduction DR.

3.1.8**nomadic device****ND**

provides communications connectivity via equipment such as cellular telephones, mobile wireless broadband (e.g. WIMAX, HC-SDMA), WiFi

3.1.9**reverse DR resource**

DR resources for the purpose of large-scale transaction of power load increase, and electricity users of all types of contracts as participating customers without restrictions on the types of electricity use contracts concluded by electricity users in the Jeju area with sales companies or district electric operators

3.1.10**smart city cloud**

advanced city platform using information and communication technology to intelligently network key functions of the city

3.1.11**standard DR resource**

DR resource that refers to national DR and includes electricity users with a contracted power of 200 kW or less, residential electricity users, and individual households belonging to collective buildings among electricity use contracts concluded with sales companies or district electric business operators as customers participating in DR.

3.1.12**virtual end node****VEN**

client and can be an EMS, a thermostat or other end device that accepts the OpenADR signal from a server (VTN)

3.1.13**virtual top node****VTN**

server that transmits OpenADR signals to end devices or other intermediate servers

3.2 Abbreviations and terms

Abbreviation	Term
AC	alternating current
CBL	customer baseline load
CSMS	charging station management system
CSO	charging station operator
DC	direct current
DR	demand response
EMS	energy management system
EV	electric vehicle
EVSE	electric vehicle supply equipment
HTML	hypertext markup language
HTTP	hypertext transfer protocol
IP	internet protocol
ND	nomadic device
OCPP	open charge point protocol