

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Framework for energy market communications –  
Part 503: Market data exchanges guidelines for the IEC 62325-351 profile**

**Cadre pour les communications pour le marché de l'énergie –  
Partie 503: Lignes directrices concernant les échanges de données du marché  
pour le profil défini dans l'IEC 62325-351**



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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 33.200

ISBN 978-2-8322-5916-0

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International Standard IEC 62325-503 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This edition cancels and replaces IEC TS 62325-503 published in 2014.

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

- a) Use of ISO/IEC 19464:2014, Advanced Message Queuing Protocol (AMQP) v1.0 specification;
- b) Splitting of the node described in the IEC TS 62325-503:2014 into a broker that implements the messaging function and a directory;
- c) Increase of operability and resilience of the communication system with the ability for an endpoint to send and receive messages through several brokers;
- d) Benefits of standardisation, performance and scalability of the AMQP protocol for transferring messages.

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

CDV	Report on voting
57/1936/CDV	57/1983/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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## INTRODUCTION

This document is part of the IEC 62325 series for deregulated energy market communications.

The principal objective of the IEC 62325 series is to produce documents which facilitate the integration of market application software developed independently by different vendors into a market management system, between market management systems and market participant systems. This is accomplished by defining message exchanges to enable these applications or systems access to public data and exchange information independent of how such information is represented internally.

The common information model (CIM) specifies the basis for the semantics for the message exchange. The European style market profile specifications that support the European style design electricity markets are defined in IEC 62325-351. These electricity markets are based on the European regulations, and on the concepts of third party access and zonal markets. The IEC 62325-451-n International documents specify the content of the messages exchanged.

The purpose of this document is to provide the guidelines to exchange the above-mentioned messages. A European market participant (trader, distribution utilities, etc.) could benefit from a single, common, harmonised, secure platform for message exchange with the European Transmission System Operators (TSOs); thus reducing the cost of building different IT platforms to interface with all the parties involved.

This document represents an important step in facilitating parties entering into electricity markets other than their national ones; they could use the same or similar information exchange system to participate in more than one market all over Europe.

This document was originally based upon the work of the European Network of Transmission System Operators (ENTSO-E) Working Group EDI.

## FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

### Part 503: Market data exchanges guidelines for the IEC 62325-351 profile

#### 1 Scope

This part of IEC 62325 is for European electricity markets.

This document specifies a standard for a communication platform which every Transmission System Operator (TSO) in Europe can use to exchange reliably and securely documents for the energy market. Consequently a European market participant (TSO, regional supervision centre, distribution utility, power exchange, etc.) could benefit from a single, common, harmonised and secure platform for message exchange with other participants; thus, reducing the cost of building different information technology (IT) platforms to interface with all the parties involved.

“MADES” (MArket Data Exchange Standard) is the acronym to designate this standard.

MADES is a specification for a decentralised common communication platform based on international IT standards:

- From an application program perspective, MADES specifies the software interfaces to exchange electronic documents with peer applications. Such interfaces mainly provide means to send and receive documents using a so-called “MADES communication system” (or “MADES system” or simply “system”). The sender can request about the status of the delivery of a document and the recipient issues a message back, the acknowledgement, when receiving the document. This makes a MADES system usable for exchanging documents in business processes requiring a reliable delivery.
- MADES also specifies services hidden to the applications such as recipient localisation, recipient connection status, message routing and security. Services include directory, authentication, signing, encryption, message tracking, message logging and message temporary storage.

The purpose of MADES is to create a secured message exchange standard based on standard communication protocols and utilising IT best practices for exchanging data over any TCP/IP communication network, in order to facilitate business-to-business (B2B) information exchanges as described in IEC 62325-351 and the IEC 62325-451 series.

A MADES system acts as a post-office organisation: the transported object is a “message” in which the document of the sender is securely packaged in an envelope containing metadata, which is necessary information for transportation, tracking and delivery.

#### 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 TS 61970-2, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

ISO/IEC 19464:2014, *Information technology – Advanced Message Queuing Protocol (AMQP) v1.0 specification*, <https://www.amqp.org/> (developed by the OASIS open standards consortium)

ISO/IEC 9594-8:2017, *Information technology – Open systems interconnection – The Directory – Part 8: Public-key and attribute certificate frameworks*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TS 61970-2 and the following apply.

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

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

NOTE For general glossary definitions, see IEC 60050, *International Electrotechnical Vocabulary*.

#### 3.1

##### **advanced message queuing protocol AMQP**

open Internet protocol for business messaging, as described in IEC 19464:2014

#### 3.2

##### **advanced message queuing protocol secured with transport layer security AMQPS**

combining of the IEC 19464 business messaging protocol with transport layer security (TLS)

#### 3.3

##### **market data exchange standard MADES**

specification described in this document for the European market style market profile

#### 3.4

##### **representational state transfer REST**

method of providing interoperability between computer systems by requesting to access and manipulate textual representations of resources using predefined set of stateless operations

#### 3.5

##### **simple authentication and security layer SASL**

framework for authentication and data security in internet protocols

#### 3.6

##### **simple object access protocol SOAP**

protocol specification for exchanging structured information in the implementation of webservices

#### 3.7

##### **transmission system operator TSO**

entity involved in electric power transmission or in transmission of natural gas