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**Power systems management and associated information exchange – Data and communications security –
Part 4: Profiles including MMS and derivatives**

**Gestion des systèmes de puissance et échanges d'informations associés –
Sécurité des communications et des données –
Partie 4: Profils comprenant le MMS et ses dérivés**



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**POWER SYSTEMS MANAGEMENT AND
ASSOCIATED INFORMATION EXCHANGE –
DATA AND COMMUNICATIONS SECURITY –****Part 4: Profiles including MMS and derivatives**

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In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62351-4 has been prepared by IEC technical committee 57: Power systems management and associated exchange.

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

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POWER SYSTEMS MANAGEMENT AND ASSOCIATED INFORMATION EXCHANGE – DATA AND COMMUNICATIONS SECURITY –

Part 4: Profiles including MMS and derivatives

1 Scope

1.1 General

This part of IEC 62351 extends the scope of IEC TS 62351-4:2007 [1]¹ by specifying a compatibility mode that provides interoperation with implementation based on IEC TS 62351-4:2007 and by specifying extended capabilities referred to as native mode.

This part of IEC 62351 specifies security requirements both at the transport layer and at the application layer. While IEC TS 62351-4:2007 primarily provided some limited support at the application layer for authentication during handshake for the Manufacturing Message Specification (MMS) based applications, this document also provides support for extended integrity and authentication both for the handshake phase and for the data transfer phase. It provides for shared key management and data transfer encryption at the application layer and it provides security end-to-end (E2E) with zero or more intermediate entities. While IEC TS 62351-4:2007 only provides support for systems based on the MMS, i.e. systems using an Open Systems Interworking (OSI) protocol stack, this document also provides support for application protocols using other protocol stacks, e.g. an Internet protocol suite (see 4.1). This support is extended to protect application protocols using XML encoding. This extended security at the application layer is referred to as E2E-security.

In addition to E2E security, this part of IEC 62351 also provides mapping to environmental protocols carrying the security related information. Only OSI and XMPP environments are currently considered.

It is intended that this part of IEC 62351 be referenced as a normative part of standards that have a need for using application protocols, e.g., MMS, in a secure manner.

It is anticipated that there are implementations, in particular Inter-Control Centre Communications Protocol (ICCP) implementations that are dependent on the IEC TS 62351-4:2007 specifications of the T-profile and the A-security-profile. The specifications from IEC TS 62351-4:2007 are therefore included in this part of IEC 62351. Implementations supporting these specifications will interwork with implementation based on IEC TS 62351-4:2007.

NOTE The A-security-profile is in the strict sense not a profile, but the term is here kept for historical reasons.

This document represents a set of mandatory and optional security specifications to be implemented to protect application protocols.

The initial audience for this document is the members of the working groups developing or making use of protocols. For the measures described in this part of IEC 62351 to take effect, they shall be accepted and referenced by the specifications for the protocols themselves.

The subsequent audience for this document is the developers of products that implement these protocols and the end user that want to specify requirements for its own environment.

¹ Numbers in square brackets refer to the bibliography.

Portions of this document may also be of use to managers and executives in order to understand the purpose and requirements of the work.

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In this document, code components are contained within Annexes A, B, C, D and E.

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 62351-1, *Power systems management and associated information exchange – Data and communications security – Part 1: Communication network and system security – Introduction to security issues*

IEC TS 62351-2, *Power systems management and associated information exchange – Data and communications security – Part 2: Glossary of terms*

IEC 62351-3:2014, *Power systems management and associated information exchange – Data and communications security – Part 3: Communication network and system security – Profiles including TCP/IP*

IEC 62351-3:2014/AMD1:2018

IEC TS 62351-8:2011, *Power systems management and associated information exchange – Data and communications security – Part 8: Role-based access control*

IEC 62351-9:2017, *Power systems management and associated information exchange – Data and communications security – Part 9: Cyber security key management for power system equipment*

ISO/IEC 8073:1997 | Rec. ITU-T X.224 (1995), *Information technology – open systems interconnection – Protocol for providing the connection-mode transport service*

ISO/IEC 8823-1:1994 | Rec. ITU-T X.226 (1994), *Information technology – open systems interconnection – connection-oriented presentation protocol: Protocol specification*

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