IEC 62453-315

Edition 1.1 2016-06
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Field device tool (FDT) Interface specification – Part 315: Communication profile integration – IEC 61784 CPF 15

Spécification des interfaces des outils des dispositifs de terrain (FDT) – Partie 315: Intégration des profils de communication – IEC 61784 CPF 15

IEC 62453-315:2009-07+AMD1:2016-06 CSV(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

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FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 62453-315 edition 1.1 contains the first edition (2009-07) [documents 65E/131/FDIS and 65E/144/RVD] and its amendment 1 (2016-06) [documents 65E/336/CDV and 65E/395A/RVC].

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 62453-315 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

Each part of the IEC 62453-3xy series is intended to be read in conjunction with IEC 62453-2.

The French version of this standard has not been voted upon.

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

A list of all parts of the IEC 62453 series, under the general title *Field Device Tool (FDT) interface specification,* can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment 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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 62453 is an interface specification for developers of FDT (Field Device Tool) components for function control and data access within a client/server architecture. The specification is a result of an analysis and design process to develop standard interfaces to facilitate the development of servers and clients by multiple vendors that need to interoperate seamlessly.

With the integration of fieldbusses into control systems, there are a few other tasks which need to be performed. In addition to fieldbus- and device-specific tools, there is a need to integrate these tools into higher-level system-wide planning- or engineering tools. In particular, for use in extensive and heterogeneous control systems, typically in the area of the process industry, the unambiguous definition of engineering interfaces that are easy to use for all those involved is of great importance.

A device-specific software component, called DTM (Device Type Manager), is supplied by the field device manufacturer with its device. The DTM is integrated into engineering tools via the FDT interfaces defined in this specification. The approach to integration is in general open for all kinds of fieldbusses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

Figure 1 shows how IEC 62453-315 is aligned in the structure of the IEC 62453 series.

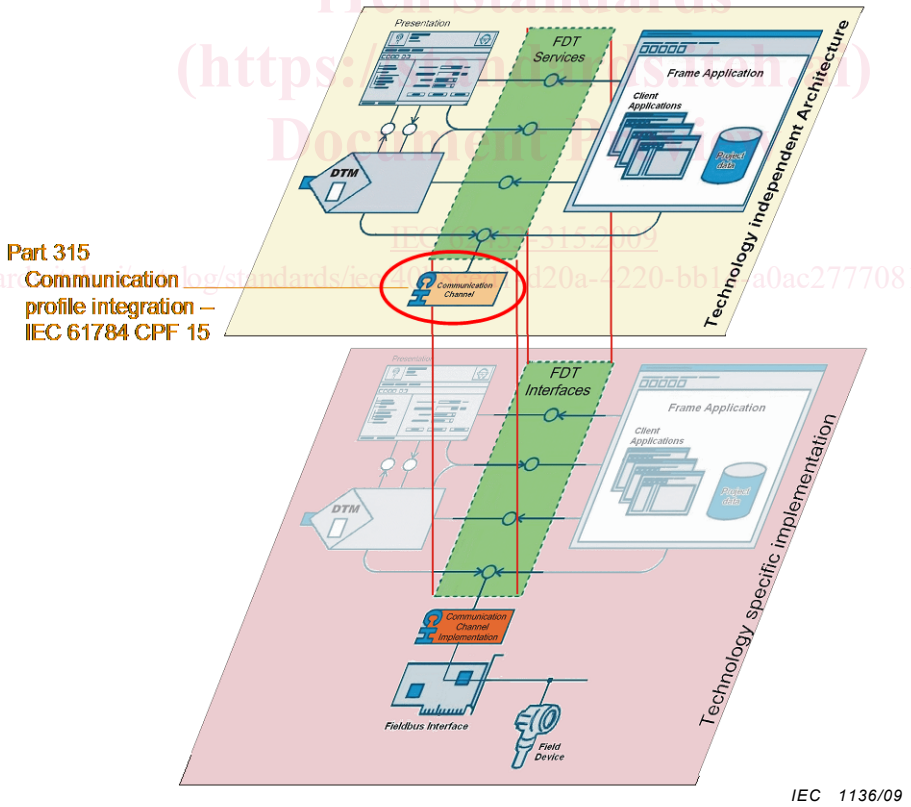

Figure 1 – Part 315 of the IEC 62453 series

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 315: Communication profile integration – IEC 61784 CPF 15

1 Scope

Communication Profile Family 15 (commonly known as Modbus[1]) defines communication profiles based on IEC 61158-5-15 and IEC 61158-6-15. The basic profile CP 15/1 (Modbus TCP) is defined in IEC 61784-1. An additional communication profile (Modbus Serial Line) is defined in [2].

This part of the IEC 62453 provides information for integrating Modbus TCP® and Modbus Serial Line® protocol support into FDT based systems.

NOTE This part of IEC 62453 only specifies the mapping of Modbus parameters to FDT data types. For restrictions of protocol specific parameters concerning allowed values and concerning limitations of arrays used in the definition of FDT data types, refer to IEC 61158-5-15 and the MODBUS Application Protocol Specification.

2 Normative references

The following referenced documents are indispensable for the application 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 61131-3, *Programmable controllers – Part 3: Programming languages*

IEC 61158-5-15, *Industrial communication networks – Fieldbus specifications – Part 5-15: Application layer service definition – Type 15 elements*

IEC 61158-6-15, *Industrial communication networks – Fieldbus specifications – Part 6-20: Application layer protocol specification – Type 15 elements*

IEC 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3*

IEC 62453-1:2009, *Field Device Tool (FDT) interface specification – Part 1: Overview and guidance*

IEC 62453-2:2009, *Field Device Tool (FDT) interface specification – Part 2: Concepts and detailed description*

RFC 791, *Internet Protocol (available at <http://www.ietf.org/rfc/rfc0791.txt)*

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1) Modbus is the trademark of Schneider Automation Inc. It is registered in the United States of America. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this profile does not require use of the trademark Modbus. Use of the trademark Modbus requires permission from Schneider Automation Inc.

3 Terms, definitions, symbols, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62453-1, IEC 62453-2 and the following apply.

3.2 Abbreviated terms

For the purposes of this document, the abbreviations given in IEC 62453-1, IEC 62453-2 and the following apply.

ASCII	American Standard Code for Information Interchange
DTM	Device Type Manager
FA	Frame Application
IP	Internet Protocol
RFC	Request For comment
TCP	Transmission Control Protocol

3.3 Conventions

3.3.1 Data type names and references to data types

The conventions for naming and referencing of data types are explained in IEC 62453-2 Clause A.1.

3.3.2 Vocabulary for requirements

The following expressions are used when specifying requirements.

- Usage of “shall” or “mandatory” – No exceptions allowed.
- Usage of “should” or “recommended” – Strong recommendation. It may make sense in special exceptional cases to differ from the described behaviour.
- Usage of “can’ or “optional’ – Function or behaviour may be provided, depending on defined conditions.

4 Bus category

The Modbus protocol is identified in the protocolId element of the structured data type 'fdt:BusCategory' by the following unique identifiers (see Table 1).

Table 1 – Protocol identifiers

Identifier value	ProtocolId name	Description
59629a40-285f-11db-a98b-0800200c9a66	‘Modbus over Serial Line’	Modbus over Serial Line
59629a41-285f-11db-a98b-0800200c9a66	‘Modbus over TCP’	Modbus over TCP

Modbus TCP is using the following unique identifiers in physicalLayer members within PhysicalLayer data type (see Table 103):