Field device tool (FDT) interface specification - Part 1: Overview and guidance

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62453-1:2009 sisaldab Euroopa standardi EN 62453-1:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 62453-1:2009 consists of the English text of the European standard EN 62453-1:2009.
Standard on kinnitatud Eesti Standardikeskuse 31.12.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 15.10.2009.	Date of Availability of the European standard text 15.10.2009.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 33.040

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English version

Field device tool (FDT) interface specification - Part 1: Overview and guidance
(IEC 62453-1:2009)

Spécification des interfaces des outils des dispositifs de terrain (FDT) - Partie 1: Vue générale et recommandations (CEI 62453-1:2009)

Field Device Tool (FDT)- Schnittstellenspezifikation - Teil 1: Überblick und Leitfaden (IEC 62453-1:2009)

This European Standard was approved by CENELEC on 2009-08-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 65E/123/FDIS, future edition 1 of IEC 62453-1, prepared by SC 65E, Devices and integration in enterprise systems, of IEC TC 65, Industrial-process measurement, control and automation, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62453-1 on 2009-08-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-05-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-08-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 62453-1:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

[5] IEC 61131	NOTE	Harmonized in EN 61131 series (not modified).
[6] IEC 61499	NOTE	Harmonized in EN 61499 series (not modified).
[7] IEC 61800-7	NOTE	Harmonized in EN 61800-7 series (not modified).
[9] IEC 61915-1	NOTE	Harmonized as EN 61915-1:2008 (not modified).
[10] IEC 62026	NOTE	Harmonized in EN 62026 series (not modified).
[13] IEC 61804-2	NOTE	Harmonized as EN 61804-2:2007 (not modified).
[14] IEC 61804-3	NOTE	Harmonized as EN 61804-3:2007 (not modified).
[16] IEC 62453	NOTE	Harmonized in EN 62453 series (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 61158	Series	Industrial communication networks – Fieldbus specifications	EN 61158	Series
IEC 61784	Series	Industrial communication networks – Profiles	EN 61784	Series
ISO/IEC 19501	2005	Information technology – Open Distributed Processing – Unified Modeling Language (UML)	–	–

CONTENTS

INTRODUCTION

Enterprise automation requires two main data flows: a “vertical” data flow from enterprise level down to the field devices including signals and configuration data, and a “horizontal” communication between field devices operating on the same or different communication technologies.

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.

Several different manufacturer specific tools have to be used. The data in these tools are often invisible data islands from the viewpoint of system life-cycle management and plant-wide automation.

To ensure the consistent management of a plant-wide control and automation technology, it is necessary to fully integrate fieldbusses, devices and sub-systems as a seamless part of a wide range of automation tasks covering the whole automation life-cycle.

IEC 62453 provides an interface specification for developers of FDT (Field Device Tool) components to support function control and data access within a client/server architecture. The availability of this standard interface facilitates development of servers and clients by multiple manufacturers and supports open interoperation.

A device or module-specific software component, called a DTM (Device Type Manager) is supplied by a manufacturer with the related device type or software entity type. Each DTM can be integrated into engineering tools via defined FDT interfaces. This approach to integration is in general open for all fieldbusses and thus supports integration of different devices and software modules into heterogeneous control systems.

The IEC 62453 common application interface supports the interests of application developers, system integrators, and manufacturers of field devices and network components. It also simplifies procurement, reduces system costs and helps manage the lifecycle. Significant savings are available in operating, engineering and maintaining the control systems.

The objectives of IEC 62453 series are to support:

- universal plant-wide tools for life-cycle management of heterogeneous fieldbus environments, multi-manufacturer devices, function blocks and modular sub-systems for all automation domains (e.g. process automation, factory automation and similar monitoring and control applications);
- integrated and consistent life-cycle data exchange within a control system including its fieldbuses, devices, function blocks and modular sub-systems;
- simple and powerful manufacturer-independent integration of different automation devices, function blocks and modular sub-systems into the life-cycle management tools of a control system.

The FDT concept supports planning and integration of monitoring and control applications, it does not provide a solution for other engineering tasks such as "electrical wiring planning”, “mechanical planning”. Plant management subjects such as "maintenance planning”, “control optimization”, “data archiving”, are not part of this FDT standard. Some of these aspects may be included in future editions of FDT publications.

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 1: Overview and guidance

1 Scope

This part of IEC 62453 presents an overview and guidance for the IEC 62453 series. It

- explains the structure and content of the IEC 62453 series (see Clause 5);
- provides explanations of some aspects of the IEC 62453 series that are common to many of the parts of the series;
- describes the relationship to some other standards.

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 61158 (all parts)*, Industrial communication networks – Fieldbus specifications*

IEC 61784 (all parts), *Industrial communication networks – Profiles*

ISO/IEC 19501:2005, *Information technology – Open Distributed Processing – Unified Modeling Language (UML)* Version 1.4.2

3 Terms, definitions, symbols, abbreviations and conventions

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

3.1 Terms and definitions

3.1.1
actor
coherent set of roles that users of use cases play when interacting with these use cases

[ISO/IEC 19501]

NOTE An actor has one role for each use case with which it communicates.

3.1.2
address
communication protocol specific access identifier

3.1.3
application
software functional unit that is specific to the solution of a problem in industrial-process measurement and control

NOTE An application may be distributed among resources, and may communicate with other applications.