

# SLOVENSKI STANDARD

## SIST EN 62453-301:2010

01-januar-2010

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### Specifikacija vmesnika orodja procesne naprave - 301. del: Integracija komunikacijskih profilov - IEC 61784 CPF 1 (IEC 62453-301:2009)

Field device tool interface specification -- Part 301: Communication profile integration - IEC 61784 CPF 1

Field Device Tool (FDT)-Schnittstellenspezifikation - Teil 301: Integration von Kommunikationsprofilen - IEC 61784 Kommunikationsprofilfamilie (CPF) 1

Spécification des interfaces des outils des dispositifs de terrain (FDT) - Partie 301: Intégration des profils de communication - CEI 61784 CPF 1

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Ta slovenski standard je istoveten z: **EN 62453-301:2009**

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25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN 62453-301**

October 2009

ICS 25.040.40; 35.100.05; 35.110

English version

**Field device tool (FDT) interface specification -  
Part 301: Communication profile integration -  
IEC 61784 CPF 1  
(IEC 62453-301:2009)**

Spécification des interfaces des outils  
des dispositifs de terrain (FDT) -  
Partie 301: Intégration des profils  
de communication -  
CEI 61784 CPF 1  
(CEI 62453-301:2009)

Field Device Tool (FDT)-  
Schnittstellenspezifikation -  
Teil 301: Integration  
von Kommunikationsprofilen -  
Kommunikationsprofilfamilie (CPF) 1  
nach IEC 61784  
(IEC 62453-301:2009)

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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

**Central Secretariat: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 65E/125/FDIS, future edition 1 of IEC 62453-301, 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 62453-301 on 2009-08-01.

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

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 62453-301:2009 was approved by CENELEC as a European Standard without any modification.

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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-2	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	EN 61158-2	2008 <sup>2)</sup>
IEC 61158-3-1	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 3-1: Data-link layer service definition - Type 1 elements	EN 61158-3-1	2008 <sup>2)</sup>
IEC 61158-4-1	2007	Industrial communication networks - Fieldbus specifications - Part 4-1: Data-link layer protocol specification - Type 1 elements	EN 61158-4-1	2008
IEC 61158-5-5	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 5-5: Application layer service definition - Type 5 elements	EN 61158-5-5	2008 <sup>2)</sup>
IEC 61158-5-9	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 5-9: Application layer service definition - Type 9 elements	EN 61158-5-9	2008 <sup>2)</sup>
IEC 61158-6-5	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 6-5: Application layer protocol specification - Type 5 elements	EN 61158-6-5	2008 <sup>2)</sup>
IEC 61158-6-9	- <sup>1)</sup>	Industrial communication networks - Fieldbus specifications - Part 6-9: Application layer protocol specification - Type 9 elements	EN 61158-6-9	2008 <sup>2)</sup>
IEC 61784-1	- <sup>1)</sup>	Industrial communication networks - Profiles - Part 1: Fieldbus profiles	EN 61784-1	2008 <sup>2)</sup>
IEC 62453-1	2009	Field device tool (FDT) interface specification - Part 1: Overview and guidance	EN 62453-1	2009
IEC 62453-2	2009	Field device tool (FDT) interface specification - Part 2: Concepts and detailed description	EN 62453-2	2009
ISO/IEC 646	- <sup>1)</sup>	Information technology - ISO 7-bit coded character set for information interchange	-	-

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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IEC 62453-301

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# INTERNATIONAL STANDARD

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**Field device tool (FDT) interface specification –  
Part 301: Communication profile integration – IEC 61784 CPF 1**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

**Part 301: Communication profile integration –  
IEC 61784 CPF 1**

## FOREWORD

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International Standard IEC 62453-301 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This part, in conjunction with the other parts of the first edition of the IEC 62453 series cancels and replaces IEC/PAS 62453-1, IEC/PAS 62453-2, IEC/PAS 62453-3, IEC/PAS 62453-4 and IEC/PAS 62453-5 published in 2006, and constitutes a technical revision.

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

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

FDIS	Report on voting
65E/125/FDIS	65E/138/RVD

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

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 this publication will remain unchanged until the maintenance result 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.

A bilingual version of this publication may be issued at a later date.

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## 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 fieldbuses 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 fieldbuses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

Figure 1 shows how IEC 62453-301 is aligned in the structure of the IEC 62453 series.

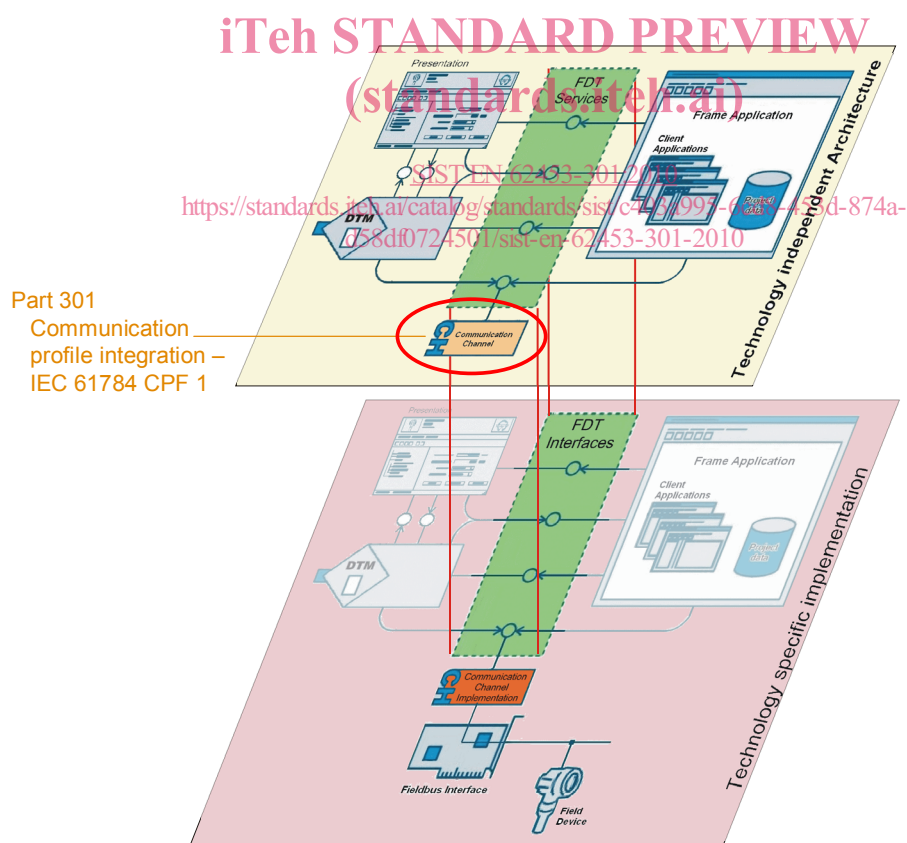


Figure 1 – Part 301 of the IEC 62453 series

## FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

### Part 301: Communication profile integration – IEC 61784 CPF 1

#### 1 Scope

Communication Profile Family 1 (commonly known as FOUNDATION™ Fieldbus<sup>1</sup>) defines communication profiles based on IEC 61158-2, Type 1, IEC 61158-3-1, IEC 61158-4-1, IEC 61158-5-5, IEC 61158-5-9, IEC 61158-6-5, and IEC 61158-6-9. The basic profiles CP 1/1 (FF H1) and CP 1/2 (FF HSE) are defined in IEC 61784-1.

This part of IEC 62453 provides information for integrating the FOUNDATION™ Fieldbus (FF) protocol into the FDT standard (IEC 62453-2).

The standard describes communication definitions, protocol specific extensions and the means for block (e.g. transducer, resource or function blocks) representation.

The new protocol specific definitions are based on FF-specifications for H1 and HSE protocols. Furthermore, the definitions contain information that is needed by systems to configure FF devices.

The scope is limited to FOUNDATION™ Fieldbus device and system specific definitions.

#### 2 Normative references

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

IEC 61158-2, *Industrial communication networks – Fieldbus specifications – Part 2: Physical layer specification and service definition*

IEC 61158-3-1, *Industrial communication networks – Fieldbus specifications – Part 3-1: Data-link layer service definition – Type 1 elements*

IEC 61158-4-1:2007, *Industrial communication networks – Fieldbus specifications – Part 4-1 Data-link layer protocol specification – Type 1 elements*

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

IEC 61158-5-9, *Industrial communication networks – Fieldbus specifications – Part 5-9: Application layer service definition – Type 9 elements*

IEC 61158-6-5, *Industrial communication networks – Fieldbus specifications – Part 6-5: Application layer protocol specification – Type 5 elements*

<sup>1</sup> FOUNDATION™ Fieldbus is a trade name of the non-profit organization Fieldbus Foundation. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by IEC of the trade name holder or any of its products. Compliance to this standard does not require use of the trade name Foundation Fieldbus™. Use of the trade name FOUNDATION™ Fieldbus requires permission of Fieldbus Foundation.

IEC 61158-6-9, *Industrial communication networks – Fieldbus specifications – Part 6-9: Application layer protocol specification – Type 9 elements*

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

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*

ISO 646, *Information technology – ISO 7-bit coded character set for information interchange*

### 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 and IEC 62453-2 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.

SM	System Management
FDA	Federation Drug Association
FF	FOUNDATION™ Fieldbus
FMS	Fieldbus Message Specification
DTM	Device Type Manager
BTM	Block Type Manager
H1	Low speed version of FF
HSE	High Speed Ethernet

#### 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.