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INTERNATIONAL
STANDARD

**Field device tool (FDT) interface specification –
Part 306: Communication profile integration – IEC 61784 CPF 6**

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FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 306: Communication profile integration – IEC 61784 CPF 6

FOREWORD

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International Standard IEC 62453-306 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/129/FDIS	65E/142/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• withdrawn,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.

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 standard. The approach to integration is in general open for all kind of fieldbusses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

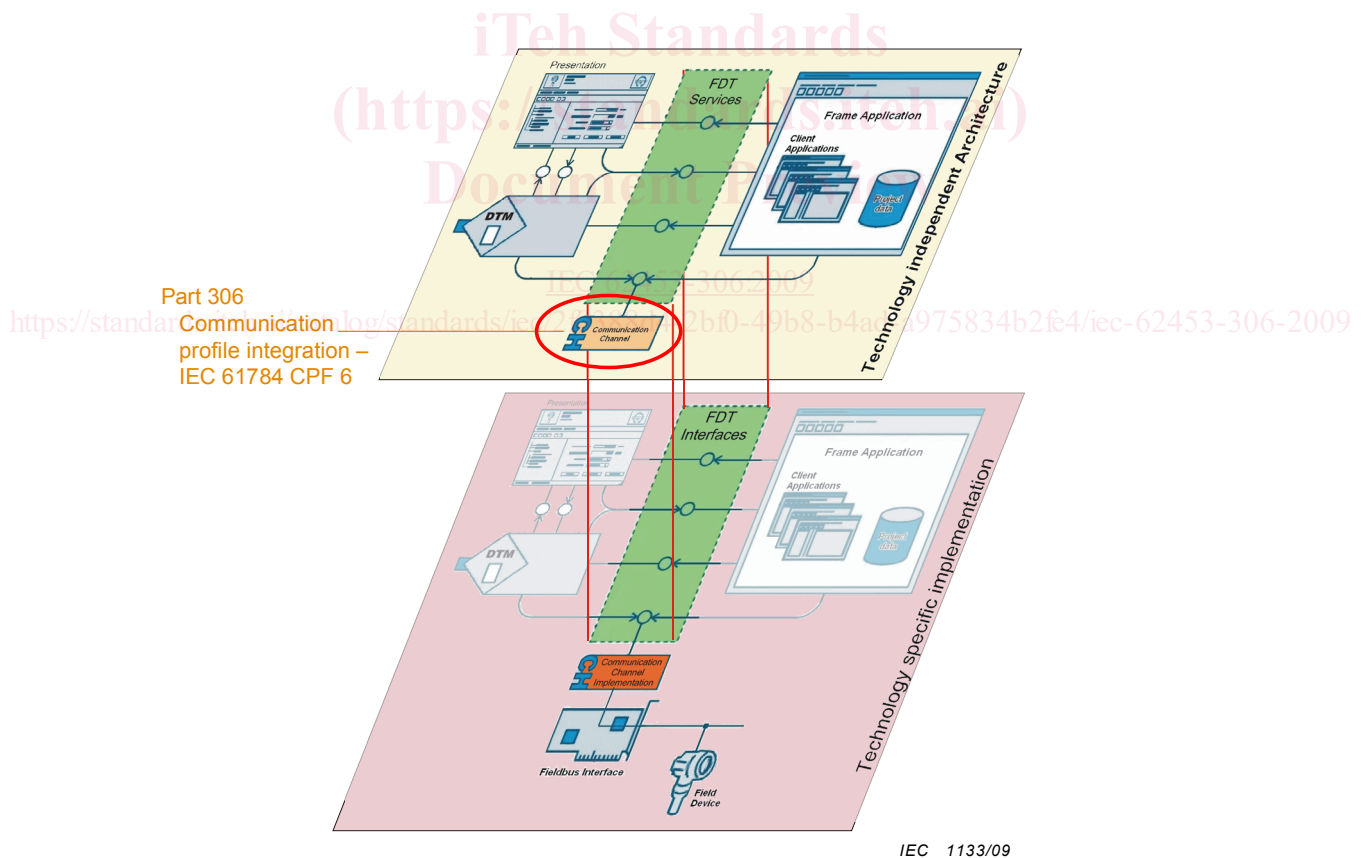Figure 1 shows how IEC 62453-306 is aligned in the structure of the IEC 62453 series.

Figure 1 – Part 306 of the IEC 62453 series

FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

Part 306: Communication profile integration – IEC 61784 CPF 6

1 Scope

Communication Profile Family 6 (commonly known as INTERBUS®[1]) defines communication profiles based on IEC 61158-2 Type 8, IEC 61158-3-8, IEC 61158-4-8, IEC 61158-5-8, and IEC 61158-6-8. The basic profiles CP 6/1 (INTERBUS) and CP 6/3 (INTERBUS minimal subset) are defined in IEC 61784-1.

This part of IEC 62453 provides information for integrating the INTERBUS® technology into the FDT standard (IEC 62453-2).

This part of the IEC 62453 specifies communication and other services.

This standard neither contains the FDT specification nor modifies it.

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 61158-3-8, *Industrial communication networks – Fieldbus specifications – Part 3-8: Data-link layer service definition – Type 8 elements*

IEC 61158-4-8, *Industrial communication networks – Fieldbus specifications – Part 4-8: Data-link layer protocol specification – Type 8 elements*

IEC 61158-5-8, *Industrial communication networks – Fieldbus specifications – Part 5-8: Application layer service definition – Type 8 elements*

IEC 61158-6-8, *Industrial communication networks – Fieldbus specifications – Part 6-8: Application layer protocol specification – Type 8 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*

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[1] INTERBUS ® is the trade name of Phoenix Contact GmbH & Co. KG., control of trade name use is given to the non-profit organisation INTERBUS Club. 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 trade name INTERBUS. Use of the trade name INTERBUS requires permission of the INTERBUS Club.

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 Symbols and abbreviated terms

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

PCP	Peripherals Communication Protocol. Non-cyclic services of IEC 61784 CPF 6
FDCML	Field Device Configuration Markup Language
PMS	Peripherals Message Specification
UML	Unified Modelling Language

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 behavior.
Usage of "can' or "optional'	Function or behavior may be provided, depending on defined conditions.

3.3.3 Use of UML

Figures in this document are using UML notation as defined in Annex A of IEC 62453-1.

4 Bus category

IEC 61784 CPF 6 protocol is identified in the protocolId element of the structured data type 'fdt:BusCategory' by the following unique identifier (Table 1):

Table 1 – Protocol identifier

Identifier Value	ProtocolId name	Description
655D3F69-B757-4236-8E80-B0F78023B1DD	'INTERBUS PCP'	Support of IEC 61784 CP 6/1
79079A7E-FF25-4709-ADB9-8AF16A4FFF82	'INTERBUS'	Support of IEC 61784 CP 6/3

IEC 61784 CPF 6 uses the following unique identifier for its physical layers (Table 2).

Table 2 – Physical layer identifier

PhysicalLayer Element	Description
D0D08238-B89C-11D9-AE7F-0000CB534BBC	LB ST
D0D08239-B89C-11D9-AE7F-0000CB534BBC	LB 2-wire
D0D0823A-B89C-11D9-AE7F-0000CB534BBC	LB Fiber Optics
D0D0823B-B89C-11D9-AE7F-0000CB534BBC	LB Inline
D0D0823C-B89C-11D9-AE7F-0000CB534BBC	LB Loop2
D0D0823D-B89C-11D9-AE7F-0000CB534BBC	LB Fieldline Modular
D0D0823E-B89C-11D9-AE7F-0000CB534BBC	LB Installations-Loop
D0D0823F-B89C-11D9-AE7F-0000CB534BBC	RB 2-wire
D0D08240-B89C-11D9-AE7F-0000CB534BBC	RB Fiber Optics
D0D08241-B89C-11D9-AE7F-0000CB534BBC	RB Fiber Optics HCS
D0D08242-B89C-11D9-AE7F-0000CB534BBC	RB Installation

5 Access to instance and device data

5.1 Process Channel objects provided by DTM

The minimum set of provided data should be:

• process values modeled as FDT-Channel objects including the ranges and scaling.

5.2 DTM services to access instance and device data

The services InstanceItemList and DeviceItemList shall provide access to at least to all mandatory parameters of the IEC 61784 CPF 6 Base Profile.

6 Protocol specific behavior

Not applicable.

7 Protocol specific usage of general data types

The following table (Table 3) shows how general data types, defined in IEC 62453-2 within namespace 'fdt', are used with IEC 61784 CPF 6 devices.

Table 3 – Protocol specific usage of general data types

Attribute	Description for use in IEC 61784 CPF 6
fdt:address	The address property is not mandatory for the exposed parameters in the DTMs. But if the address property is used the string shall be constructed according to the rules of the semanticId. That means the property 'semanticId' is always the same as the property 'address'
fdt:protocolId	See 3.3
fdt:physicalLayer	See Clause 5
fdt:deviceTypeId	The property "fdt:DtmDeviceType/@deviceTypeId" shall contain the Identification Code (Ident Code) according to the IEC 61784 CPF 6 specification (1 Byte). The Ident Code shall be entered in decimal format
fdt:subDeviceType	Enter manufacturer specific value here
fdt:vendor	The attribute fdt:DtmDeviceType/VersionInformation/@vendor shall contain the Manufacturer's_Name, which is returned in the PCP service