PD CLC/TR 62453-51-20:2019

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# Field device tool (FDT) interface specification

Part 51-20: Communication implementation for common object model – IEC 61784 CPF 2 (IEC/TR 62453-51-20:2017)

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# National foreword

This Published Document is the UK implementation of CLC/TR 62453-51-20:2019. It is identical to IEC TR 62453-51-20:2017. It supersedes PD CLC/TR 62453-502:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/65/3, Industrial communications: process measurement and control, including fieldbus.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2019

ISBN 978 0 580 95960 8

ICS 25.040.40; 35.100.05; 35.110

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This Published Document was published under the authority of the Standards Policy and Strategy Committee on 28 February 2019.

**Amendments/corrigenda issued since publication**

| Date | Text affected |
|---|---|

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TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

# CLC/TR 62453-51-20

February 2019

ICS 25.040.40; 35.110

English Version

# Field device tool (FDT) interface specification - Part 51-20: Communication implementation for common object model - IEC 61784 CPF 2 (IEC/TR 62453-51-20:2017)

Spécification des interfaces des outils des dispositifs de terrain (FDT) - Partie 51-20: Mise en œuvre d'un profil de communication pour le modèle d'objet commun - CPF 2 de l'IEC 61784 (IEC/TR 62453-51-20:2017)

Field Device Tool (FDT)-Schnittstellenspezifikation - Teil 51-20: Kommunikationsimplementierung mit dem allgemeinen Objektmodell (COM) - Kommunikationsprofilfamilie (CPF) 2 nach IEC 61784 (IEC/TR 62453-51-20:2017)

This Technical Report was approved by CENELEC on 2019-01-07.

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# European foreword

This document (CLC/TR 62453-51-20:2019) consists of the text of the IEC/TR 62453-51-20:2017 prepared by IEC/TC 65 "Industrial-process measurement, control and automation".

## Endorsement notice

The text of the International Standard IEC TR 62453-51-20:2017 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:

| | | |
|---|---|---|
| IEC 61131-3:2013 | NOTE | Harmonized as EN 61131-3:2013 (not modified). |
| IEC 61784-3-2 | NOTE | Harmonized as EN 61784-3-2. |
| ISO/IEC 7498 (all parts) | NOTE | Harmonized in EN ISO/IEC 7498-1 series. |



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# Annex ZA
(normative)
## Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 61158-2 | - | Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition | EN 61158-2 | - |
| IEC 61158-3-2 | - | Industrial communication networks - Fieldbus specifications - Part 3-2: Data-lonk layer service definition - Type 2 elements | EN 61158-3-2 | - |
| IEC 61158-4-2 | - | Industrial communication networks - Fieldbus specifications - Part 4-2: Data-link layer protocol specification - Type 2 elements | EN 61158-4-2 | - |
| IEC 61158-5-2 | - | Industrial communication networks - Fieldbus specifications - Part 5-2: Application layer service definition - Type 2 elements | EN 61158-5-2 | - |
| IEC 61158-6-2 | - | Industrial communication networks - Fieldbus specifications - Part 6-2: Application layer protocol specification - Type 2 elements | EN 61158-6-2 | - |
| IEC 61784-1 | 2014 | Industrial communication networks - Profiles - Part 1: Fieldbus profiles | EN 61784-1 | 2014 |
| IEC 61784-2 | - | Industrial communication networks - Profiles - Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3 | EN 61784-2 | - |
| IEC 62026-3 | - | Low-voltage switchgear and controlgear - Controller-device interfaces (CDIs) - Part 3: DeviceNet | - | - |
| IEC 62453-1 | 2016 | Field device tool (FDT) interface specification - Part 1: Overview and guidance | EN 62453-1 | 2017 |
| IEC 62453-2 | 2016 | Field device tool (FDT) interface specification - Part 2: Concepts and detailed description | EN 62453-2 | 2017 |
| IEC/TR 62453-41 | 2016 | Field device tool (FDT) interface specification - - Part 41: Object model integration profile - Common object model | - | - |
| IEC 62453-302 | 2016 | Field device tool (FDT) interface specification - Part 302: Communication profile integration - IEC 61784 CPF 2 | EN 62453-302 | 2017 |



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

## Part 51-20: Communication implementation for common object model – IEC 61784 CPF 2

## FOREWORD

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IEC TR 62453-51-20, which is a technical report, has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process management, control and automation.

This document cancels and replaces IEC TR 62453-502 published in 2009. This edition constitutes a technical revision. The main change consists in improved support for Ethernet/IP.

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Each part of the IEC 62453-51-xy series is intended to be read in conjunction with its corresponding part in the IEC 62453-3xy series. This document corresponds to IEC 62453-302.

The text of this technical report is based on the following documents:

| Enquiry draft | Report on voting |
|---|---|
| 65E/440/DTR | 65E/514/RVC |

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

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

The 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 document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document 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 Field Device Tool (FDT) 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 Device Type Manager (DTM), 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 kind of fieldbuses and thus meets the requirements for integrating different kinds of devices into heterogeneous control systems.

Figure 1 shows how this part of the IEC 62453-51-xy series is aligned in the structure of the IEC 62453 series.

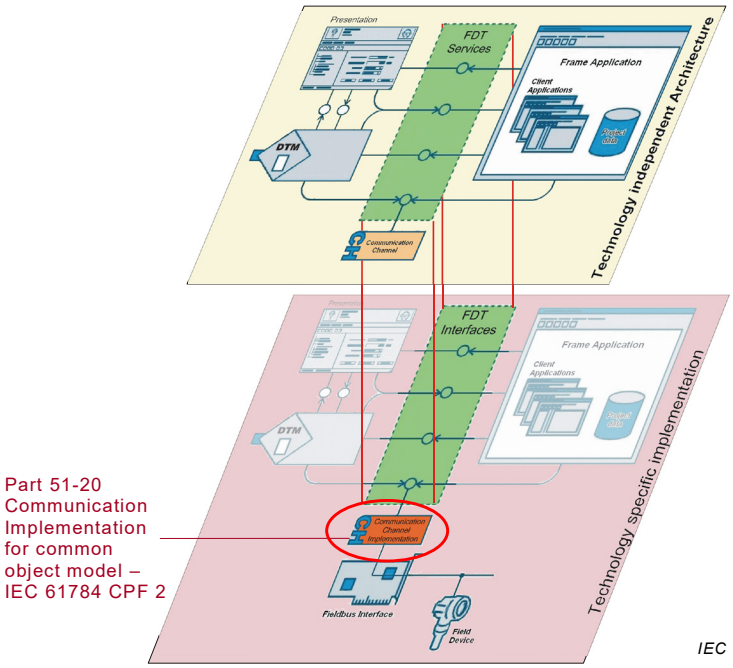


**Figure 1 – Part 51-20 of the IEC 62453 series**

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# FIELD DEVICE TOOL (FDT) INTERFACE SPECIFICATION –

## Part 51-20: Communication implementation for common object model – IEC 61784 CPF 2

## 1 Scope

This part of the IEC 62453-51-xy series, which is a Technical Report, provides information for integrating the CIP™ technology into the COM-based implementation of FDT interface specification (IEC TR 62453-41).

The Communication Profile Family 2 (commonly known as CIP™[1]) defines communication profiles based on IEC 61158-2 Type 2, IEC 61158-3-2, IEC 61158-4-2, IEC 61158-5-2, and IEC 61158-6-2, IEC 62026-3. The basic profiles CP 2/1 (ControlNet™[2]), CP 2/2 (EtherNet/IP™[3]), and CP 2/3 (DeviceNet™[1]) are defined in IEC 61784-1 and IEC 61784-2. An additional communication profile (CompoNet™),also based on CIP™, is defined in [15][4].

This document specifies implementation of communication and other services based on IEC 62453-302.

This document neither contains the FDT specification nor modifies it.

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

IEC 61158-3-2, *Industrial communication networks – Fieldbus specifications – Part 3-2: Data-link layer service definition – Type 2 elements*

IEC 61158-4-2, *Industrial communication networks – Fieldbus specifications – Part 4-2: Data-link layer protocol specification – Type 2 elements*

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