ICS 25.040.40, 35.100.05, 35.110

SLOVENSKÁ TECHNICKÁ NORMA

Január 2026

STN	**Špecifikácia rozhrania softvérových nástrojov na prácu s prevádzkovými prístrojmi (FDT) Časť 1: Prehľad a návod**	**STN EN IEC 62453-1** 18 4012

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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/25

Obsahuje: EN IEC 62453-1:2025, IEC 62453-1:2025

Oznámením tejto normy sa od 31.10.2028 ruší
STN EN 62453-1 (18 4012) z augusta 2017

obsahuje farebné strany

141635

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2026
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62453-1

October 2025

ICS 25.040.40; 35.100.05; 35.110

Supersedes EN 62453-1:2017

English Version

Field device tool (FDT) interface specification - Part 1: Overview and guidance (IEC 62453-1:2025)

Spécification des interfaces des outils des dispositifs de terrain (FDT) - Partie 1: Vue d'ensemble et guide (IEC 62453-1:2025)

Field Device Tool (FDT)-Schnittstellenspezifikation - Teil 1: Überblick und Leitfaden (IEC 62453-1:2025)

This European Standard was approved by CENELEC on 2025-09-16. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2025 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN IEC 62453-1:2025 E

European foreword

The text of document 65E/1173/FDIS, future edition 3 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 approved by CENELEC as EN IEC 62453-1:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2026-10-31
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2028-10-31

This document supersedes EN 62453-1:2017 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62453-1:2025 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 standard indicated:

IEC 61131 series	NOTE	Approved as EN IEC 61131 series
IEC 61131-3	NOTE	Approved as EN IEC 61131-3
IEC 61158 series	NOTE	Approved as EN 61158 series
IEC 61158-1	NOTE	Approved as EN IEC 61158-1
IEC 61375-3-3	NOTE	Approved as EN 61375-3-3
IEC 61499 series	NOTE	Approved as EN 61499 series
IEC 61499-1	NOTE	Approved as EN 61499-1
IEC 61784 series	NOTE	Approved as EN IEC 61784 series
IEC 61784-1 series	NOTE	Approved as EN IEC 61784-1 series
IEC 61784-2 series	NOTE	Approved as EN IEC 61784-2 series
IEC 61800-7 series	NOTE	Approved as EN 61800-7 series
IEC 61800-7-1	NOTE	Approved as EN 61800-7-1
IEC 61804-2	NOTE	Approved as EN IEC 61804-2
IEC 61804-3	NOTE	Approved as EN IEC 61804-3

IEC 61804-4	NOTE	Approved as EN IEC 61804-4
IEC 61850 series	NOTE	Approved as EN 61850 series
IEC 61915-1	NOTE	Approved as EN 61915-1
IEC 62026 series	NOTE	Approved as EN 62026 series
IEC 62026-1	NOTE	Approved as EN IEC 62026-1
IEC 62264 series	NOTE	Approved as EN IEC 62264 series
IEC 62453 series	NOTE	Approved as EN IEC 62453 series
IEC 62453-2	NOTE	Approved as EN IEC 62453-2
IEC 62453-301	NOTE	Approved as EN 62453-301
IEC 62453-302	NOTE	Approved as EN IEC 62453-302
IEC 62453-303-1	NOTE	Approved as EN 62453-303-1
IEC 62453-303-2	NOTE	Approved as EN 62453-303-2
IEC 62453-306	NOTE	Approved as EN 62453-306
IEC 62453-309	NOTE	Approved as EN IEC 62453-309
IEC 62453-315	NOTE	Approved as EN 62453-315
IEC/TR 62453-41	NOTE	Approved as CLC/TR IEC 62453-41
IEC/TR 62453-42	NOTE	Approved as CLC/TR IEC 62453-42
IEC/TR 62453-51-10	NOTE	Approved as CLC/TR IEC 62453-51-10
IEC/TR 62453-51-20	NOTE	Approved as CLC/TR 62453-51-20
IEC/TR 62453-51-31	NOTE	Approved as CLC/TR 62453-51-31
IEC/TR 62453-51-32	NOTE	Approved as CLC/TR 62453-51-32
IEC/TR 62453-51-60	NOTE	Approved as CLC/TR 62453-51-60
IEC/TR 62453-51-90	NOTE	Approved as CLC/TR 62453-51-90
IEC/TR 62453-51-150	NOTE	Approved as CLC IEC/TR 62453-51-150
IEC/TR 62453-52-31	NOTE	Approved as CLC IEC/TR 62453-52-31
IEC/TR 62453-52-32	NOTE	Approved as CLC IEC/TR 62453-52-32
IEC/TR 62453-52-90	NOTE	Approved as CLC IEC/TR 62453-52-90
IEC/TR 62453-52-150	NOTE	Approved as CLC IEC/TR 62453-52-150
IEC/TR 62453-61	NOTE	Approved as CLC/TR 62453-61
IEC/TR 62453-62	NOTE	Approved as CLC/TR IEC 62453-62
IEC 62453-71	NOTE	Approved as EN IEC 62453-71
IEC 62541 series	NOTE	Approved as EN IEC 62541 series
IEC 62541-100	NOTE	Approved as EN 62541-100
IEC 62769 series	NOTE	Approved as EN IEC 62769 series

IEC 62453-1

Edition 3.0 2025-08

INTERNATIONAL STANDARD

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

ICS 25.040.40; 35.100.05; 35.110 ISBN 978-2-8327-0582-7

IEC 62453-1:2025-08(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2025 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

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

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

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 9
2 Normative references 9
3 Terms, definitions, symbols, abbreviated terms and conventions 9
3.1 Terms and definitions 9
3.2 Abbreviated terms 15
3.3 Conventions 15
4 FDT overview 15
4.1 State of the art 15
4.2 Objectives of FDT 16
4.2.1 General features 16
4.2.2 Device and module manufacturer benefits 17
4.2.3 System manufacturer and integrator benefits 18
4.2.4 Other applications 18
4.3 FDT model 18
4.3.1 General 18
4.3.2 Frame Applications 20
4.3.3 Device Type Manager 21
4.3.4 Communication Channel concept 22
4.3.5 Presentation object 24
5 Structure of the IEC 62453 series 24
5.1 Structure overview 24
5.2 Part 2 – Concepts and detailed description 26
5.3 Parts 3xy – Communication profile integration 26
5.3.1 General 26
5.3.2 Communication profile integration – IEC 61784 CPF 1 26
5.3.3 Communication profile integration – IEC 61784 CPF 2 27
5.3.4 Communication profile integration – IEC 61784 CP 3/1 and 3/2 27
5.3.5 Communication profile integration – IEC 61784 CP 3/4, CP 3/5 and 3/6 27
5.3.6 Communication profile integration – IEC 61784 CPF 6 27
5.3.7 Communication profile integration – IEC 61784 CPF 9 27
5.3.8 Communication profile integration – IEC 61784 CPF 15 27
5.4 Parts 4z – Object model integration profiles 27
5.4.1 General 27
5.4.2 Object model integration profile – Common object model (COM) 28
5.4.3 Object model integration profile – Common language infrastructure (CLI) 28
5.4.4 Object model integration profile – CLI and HTML 28
5.5 Parts 51-xy/52-xy/53-xy – Communication profile implementation 28
5.5.1 General 28
5.5.2 Communication profile implementation – IEC 61784 CPF 1 28
5.5.3 Communication profile implementation – IEC 61784 CPF 2 28
5.5.4 Communication profile implementation – IEC 61784 CP 3/1 and 3/2 28
5.5.5 Communication profile implementation – IEC 61784 CP 3/4, CP 3/5 and 3/6 29
5.5.6 Communication profile implementation – IEC 61784 CPF 6 29

5.5.7 Communication profile implementation – IEC 61784 CPF 9 29
5.5.8 Communication profile implementation – IEC 61784 CPF 15 29
5.6 Parts 6z – DTM styleguides 29
5.6.1 General 29
5.6.2 Device Type Manager (DTM) styleguide for common object model 29
5.6.3 Field Device Tool (FDT) styleguide for common language infrastructure 29
5.7 Part 71 – OPC UA Information Model for FDT 29
6 Relation of the IEC 62453 series to other standardization activities 30
7 Migration to DTM 33
8 How to read IEC 62453 35
8.1 Architecture 35
8.2 Dynamic behaviour 35
8.3 Structured data types 35
8.4 Fieldbus communication 35
Annex A (normative) UML notation 36
A.1 Common model elements 36
A.1.1 General 36
A.1.2 Note 36
A.2 Class diagram 36
A.2.1 General 36
A.2.2 Class 36
A.2.3 Abstract class 37
A.2.4 Association 37
A.2.5 Composition 37
A.2.6 Aggregation 37
A.2.7 Dependency 38
A.2.8 Association class 38
A.2.9 Generalization 38
A.2.10 Interface 39
A.2.11 Multiplicity 39
A.2.12 Enumeration class 39
A.3 Component diagram 40
A.3.1 General 40
A.3.2 Component 40
A.4 Statechart diagram 40
A.4.1 General 40
A.4.2 State 40
A.4.3 Initial state 41
A.4.4 Final state 41
A.4.5 Composite state 41
A.5 Use case diagram 41
A.5.1 General 41
A.5.2 Actor 42
A.5.3 Use case 42
A.5.4 Inheritance relation 42
A.6 Sequence diagram 42
A.6.1 General 42
A.6.2 Frame 43

A.6.3 Object with life line 43
A.6.4 Method calls 44
A.6.5 State and constraint 45
A.6.6 Alternative, optional and repetitive execution sequence 45
A.6.7 Break notation 46
A.6.8 Interaction references 47
A.7 Object diagram 47
Annex B (informative) Implementation policy 48
Bibliography 49

Figure 1 − Different tools and fieldbuses result in limited integration 16
Figure 2 – Full integration of all devices and modules into a homogeneous system 17
Figure 3 – General architecture and components 19
Figure 4 – FDT software architecture 21
Figure 5 – General FDT client/server relationship 22
Figure 6 – Typical FDT channel architecture 23
Figure 7 – Channel/parameter relationship 24
Figure 8 – Structure of the IEC 62453 series 25
Figure 9 – Standards related to IEC 62453 in an automation hierarchy 30
Figure 10 – Standards related to IEC 62453 – Grouped by purpose 33
Figure 11 – DTM implementations 34
Figure A.1 – Note 36
Figure A.2 – Class 36
Figure A.3 – Icons for class members 36
Figure A.4 – Association 37
Figure A.5 – Navigable Association 37
Figure A.6 – Composition 37
Figure A.7 – Aggregation 37
Figure A.8 – Dependency 38
Figure A.9 – Association class 38
Figure A.10 – Abstract class, generalization and interface 38
Figure A.11 – Interface related notations 39
Figure A.12 – Multiplicity 39
Figure A.13 – Enumeration datatype 40
Figure A.14 – Component 40
Figure A.15 – Elements of UML statechart diagrams 40
Figure A.16 – Example of UML state chart diagram 41
Figure A.17 – UML use case syntax 42
Figure A.18 – UML sequence diagram 43
Figure A.19 – Empty UML sequence diagram frame 43
Figure A.20 – Object with life line and activation 44
Figure A.21 – Method calls 44
Figure A.22 – Modelling guarded call and multiple calls 44
Figure A.23 – Call to itself 45

Figure A.24 – Continuation / StateInvariant 45
Figure A.25 – Alternative fragment 46
Figure A.26 – Option fragment 46
Figure A.27 – Loop combination fragment 46
Figure A.28 – Break notation 46
Figure A.29 – Sequence reference 47
Figure A.30 – Objects 47
Figure A.31 – Object link 47

Table 1 – Overview of IEC 62453 series 26
Table 2 – Overview of related standards 31

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62453-1 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This third edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) introduction of a new implementation technology (defined in IEC TS 62453-43);
b) introduction of an OPC UA information model for FDT (defined in IEC 62453-71).

The text of this International Standard is based on the following documents:

Draft	Report on voting
65E/1173/FDIS	65E/1176/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

Enterprise automation employs 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 fieldbuses into control systems, there are a few additional tasks to be performed. They can result in a large number of fieldbus- and device-specific tools in addition to system and engineering tools. Integration of these tools into higher-level system-wide planning or engineering tools is an advantage. 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 are 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 important to fully integrate fieldbuses, 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[1] (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 the 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.

---

[1] FDT® is a registered trade name of FDT Group AISBL. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance to this document does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

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 can be included in future editions of FDT publications.

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;
- provides definitions of terms used in other parts of the IEC 62453 series.

2 Normative references

There are no normative references in this document.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN