



**BSI Standards Publication**

## **Field device integration (FDI)®**

---

Part 151-1: Profiles — OPC UA

## National foreword

This British Standard is the UK implementation of EN IEC 62769-151-1:2023. It is identical to IEC 62769-151-1:2023.

The UK participation in its preparation was entrusted to Technical Committee GEL/65/5, Devices and integration in enterprise systems.

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

### Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023  
Published by BSI Standards Limited 2023

ISBN 978 0 539 20043 0

ICS 33.040.40

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2023.

### Amendments/corrigenda issued since publication

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

---

English Version

Field device integration (FDI®) - Part 151-1: Profiles - OPC UA  
(IEC 62769-151-1:2023)

Intégration des appareils de terrain (FDI®) - Partie 151-1:  
Profils - OPC UA  
(IEC 62769-151-1:2023)

Feldgeräteintegration (FDI®) - Teil 151-1: Profile - OPC UA  
(IEC 62769-151-1:2023)

This European Standard was approved by CENELEC on 2023-05-19. 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

## **European foreword**

The text of document 65E/853/CDV, future edition 1 of IEC 62769-151-1, 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 62769-151-1:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2024-02-19 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2026-05-19 document have to be withdrawn

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 62769-151-1:2023 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62769 (series)    NOTE    Approved as EN IEC 62769 (series)

## 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 Where 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](http://www.cenelec.eu).

| <u>Publication</u> | <u>Year</u> | <u>Title</u>                                                                                     | <u>EN/HD</u>    | <u>Year</u> |
|--------------------|-------------|--------------------------------------------------------------------------------------------------|-----------------|-------------|
| IEC 61784-1        | -           | Industrial communication networks - Profiles<br>Part 1: Fieldbus profiles                        | EN IEC 61784-1  | -           |
| IEC 61804          | series      | Function blocks (FB) for process control and<br>electronic device description language<br>(EDDL) | EN IEC 61804    | series      |
| IEC 62541-4        | 2020        | OPC Unified Architecture - Part 4: Services                                                      | EN IEC 62541-4  | 2020        |
| IEC 62541-6        | 2020        | OPC Unified Architecture - Part 6: Mappings                                                      | EN IEC 62541-6  | 2020        |
| IEC 62541-12       | 2020        | OPC unified architecture - Part 12: Discovery<br>and global services                             | EN IEC 62541-12 | 2020        |
| IEC 62541-100      | -           | OPC Unified Architecture - Part 100: Device<br>Interface                                         | EN 62541-100    | -           |
| IEC 62769-4        | -           | Field Device Integration (FDI®) - Part 4: FDI<br>Packages                                        | -               | -           |
| IEC 62769-5        | -           | Field Device Integration (FDI®) - Part 5: FDI<br>Information Model                               | -               | -           |
| IEC 62769-7        | -           | Field Device Integration (FDI®) - Part 7:<br>Communication Devices                               | -               | -           |
| IEC 62769-100      | 2020        | Field device integration (FDI) - Part 100:<br>Profiles - Generic protocols                       | -               | -           |



## CONTENTS

|                                                                           |    |
|---------------------------------------------------------------------------|----|
| FOREWORD .....                                                            | 3  |
| 1 Scope .....                                                             | 5  |
| 2 Normative references .....                                              | 5  |
| 3 Terms, definitions, abbreviated terms and acronyms .....                | 5  |
| 3.1 Terms and definitions .....                                           | 5  |
| 3.2 Abbreviated terms and acronyms .....                                  | 6  |
| 4 Conventions .....                                                       | 6  |
| 4.1 EDDL syntax .....                                                     | 6  |
| 4.2 Capitalizations .....                                                 | 6  |
| 5 PSDs for OPC UA .....                                                   | 7  |
| 5.1 General .....                                                         | 7  |
| 5.2 Header .....                                                          | 7  |
| 5.2.1 General .....                                                       | 7  |
| 5.2.2 Service Code .....                                                  | 7  |
| 5.2.3 NodeId .....                                                        | 7  |
| 5.2.4 NodePath .....                                                      | 8  |
| 5.2.5 AttributeId .....                                                   | 8  |
| 5.2.6 IndexRange .....                                                    | 8  |
| 5.3 ProtocolIdentifier .....                                              | 10 |
| 5.4 Address .....                                                         | 10 |
| 5.5 Manufacturer .....                                                    | 10 |
| 5.6 DeviceModel .....                                                     | 11 |
| 5.7 Device Revision .....                                                 | 11 |
| 5.8 Serial Number .....                                                   | 11 |
| 5.9 Tag .....                                                             | 11 |
| 5.10 ProfileId .....                                                      | 11 |
| 5.11 Version .....                                                        | 11 |
| 5.12 ProtocolSupportFile .....                                            | 11 |
| 5.13 ExtendedDeviceRevision .....                                         | 11 |
| 6 Error Codes .....                                                       | 11 |
| 7 Example OPC UA EDD commands .....                                       | 12 |
| 7.1 Read .....                                                            | 12 |
| 7.2 Write .....                                                           | 13 |
| 7.3 Method Call .....                                                     | 14 |
| 8 Scanning .....                                                          | 15 |
| 8.1 General .....                                                         | 15 |
| 8.2 Scanning for the available OPC UA devices .....                       | 15 |
| 8.3 Scanning for the available end points on a OPC UA device .....        | 15 |
| 8.4 Scanning of OPC UA Device when the GDS is not available .....         | 16 |
| Bibliography .....                                                        | 17 |
| Table 1 – Service Codes .....                                             | 7  |
| Table 2 – OPC UA Services and their representation in an EDD HEADER ..... | 9  |
| Table 3 – EDD datatype mapping with OPC UA datatype .....                 | 9  |
| Table 4 – Address attributes .....                                        | 10 |
| Table 5 – Error Code values .....                                         | 12 |

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI®) –

## Part 151-1: Profiles – OPC UA

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

IEC 62769-151-1 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.

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

| Draft       | Report on voting |
|-------------|------------------|
| 65E/853/CDV | 65E/911/RVC      |

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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).