
Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 42: Application protocols - Application layer (IEC 1334-4-42:1996)

Distribution automation using distribution line carrier systems -- Part 4: Data communication protocols -- Section 42: Application protocols - Application layer

Verteilungsautomatisierung mit Hilfe von Trägersystemen auf Verteilungsleitungen -- Teil 4: Datenkommunikationsprotokolle -- Hauptabschnitt 42: Anwendungsprotokolle - Anwendungsschicht

Automatisation de la distribution à l'aide de systèmes de communication à courants porteurs -- Partie 4: Protocoles de communication de données -- Section 42: Protocoles d'application - Couche application

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(IEC 1334-4-42:1996)

Automatisation de la distribution à l'aide de systèmes de communication à courants porteurs

Partie 4: Protocoles de communication de données

Section 42: Protocoles d'application

Couche application

(CEI 1334-4-42:1996)

Verteilungsautomatisierung mit Hilfe von Trägersystemen auf Verteilungsleitungen

Teil 4: Datenkommunikationsprotokolle Hauptabschnitt 42:

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Anwendungsschicht

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 57/265/FDIS, future edition 1 of IEC 1334-4-42, prepared by IEC TC 57, Power system control and associated communications, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61334-4-42 on 1996-10-01.

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) 1997-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-07-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes A and ZA are normative and annex B is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 1334-4-42:1996 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

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 1334-4-1	1996	Distribution automation using distribution line carrier systems Part 4: Data communication protocols Section 1: Reference model of the communication system	EN 61334-4-1	1996
IEC 1334-4-32	1996	Section 32: Data link layer - Logical link control (LLC)	EN 61334-4-32	1996
IEC 1334-4-41	1996	Section 41: Application protocols Distribution line message specification	EN 61334-4-41	1996
ISO 7498	1984	Information processing systems - Open Systems Interconnection - Basic Reference Model	EN 27498	1989
ISO 7498-3	1989	Part 3: Naming and addressing	-	-
ISO/TR 8509	1987	Information processing systems - Open Systems Interconnection - Service conventions	-	-
ISO 8649	1988	Information processing systems - Open Systems Interconnection - Service definition for the Association Control Service Element	-	-
A2	1991	Connectionless-mode ACSE service	-	-
ISO 8824	1990	Information technology - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)	-	-
ISO 8825	1990	Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)	-	-
ISO 9545	1994	Information technology - Open Systems Interconnection - Application Layer structure	-	-

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**Automatisation de la distribution à l'aide
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**Partie 4:
Protocoles de communication de données –
Section 42: Protocoles d'application –
Couche application**

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**Distribution automation using
distribution line carrier systems –**

**Part 4:
Data communication protocols –
Section 42: Application protocols –
Application layer**

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DISTRIBUTION AUTOMATION USING DISTRIBUTION
LINE CARRIER SYSTEMS –**
**Part 4: Data communication protocols –
Section 42: Application protocols – Application layer**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 1334-4-42 has been prepared by IEC technical committee 57: Power system control and associated communications.

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

FDIS	Report on voting
57/265/FDIS	57/293/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.

Annex A forms an integral part of this standard.

Annex B is for information only.

INTRODUCTION

The application layer supports the DLMS application specification and the management application of each station. DCP makes use of the connectionless ACSE ISO standards and of the application service elements DLMS and management.

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DISTRIBUTION AUTOMATION USING DISTRIBUTION LINE CARRIER SYSTEMS –

Part 4: Data communication protocols – Section 42: Application protocols – Application layer

1 Scope

The specifications of the sections of IEC 1334-4 apply to the communication through the so-called distribution line carrier technology (DLC) on both low and medium voltage distribution networks. The application range based on telecommunication processes is wide and cannot be described exhaustively in this section; application examples are: control and monitoring of the distribution network, order broadcast, control of user interfaces, public lighting, traffic lights supervision, automatic meter reading, etc.

This section of IEC 1334-4 describes the rules used to design an application service element, the ISO connectionless ACSE, and the DLMS Application Service Element.

Extensions to other communication media are also allowed.

The mapping of the DLMS services is based on the three-layer stack. Future extensions to stacks of more than three layers are possible and may use the rules described in this section. In such a case, the DLMS interface with the underlying layers should be remapped to the new one: the specification of the mapping criteria will be dealt with in corresponding appendices, in respect of the rules defined in this section.

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2 Normative references

[49082c720d30/sist-en-61334-4-42-1997](https://standards.iteh.ai/catalog/standards/sist/33b5f59b-cf42-4b04-9427-49082c720d30/sist-en-61334-4-42-1997)

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 1334-4. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 1334-4 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 1334-4-1:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 1: Reference model of the communication system*

IEC 1334-4-32: 1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 32: Data link layer – Logical link control (LLC)*

IEC 1334-4-41: 1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 41: Application protocols – Distribution line message specification*

ISO 7498: 1984, *Information processing systems – Open Systems Interconnection – Basic Reference Model*

ISO 7498-3: 1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and Addressing*

ISO/TR 8509: 1987, *Information processing systems – Open Systems Interconnection – Services conventions*

ISO 8649: 1988, *Information processing systems – Open Systems Interconnection – Service definition for the Association Control Service Element*
Amendment 2 (1991): Connectionless-mode ACSE service

ISO/IEC 8824: 1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*

ISO/IEC 8825: 1990, *Information technology – Open Systems Interconnection – Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*

ISO/IEC 9545: 1994, *Information technology – Open Systems Interconnection – Application layer structure*

3 Definitions

For the purposes of this International Standard, the following definitions apply:

3.1 Reference model definitions

This section is based on the concepts developed in ISO 7498 and makes use of the following terms defined in it:

- a) application layer;
- b) application process;
- c) application entity;
- d) (N) – function;
- e) (N) – layer;
- f) (N) – protocol;
- g) (N) – protocol-control-information;
- h) (N) – protocol-data-unit;
- i) real open system.

3.2 Naming and addressing definitions

This section makes use of the following terms:

- a) application-process title;
- b) application-entity qualifier;
- c) application-entity title;
- d) application-process invocation-identifier;
- e) application-entity invocation-identifier.

3.3 Service conventions definitions

This section makes use of the following terms defined in ISO/TR 8509:

- a) service-provider;
- b) service-user;
- c) confirmed service;
- d) non-confirmed service;
- e) provider-initiated service;
- f) primitive;
- g) request (primitive);
- h) indication (primitive);
- i) response (primitive);
- j) confirm (primitive).

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3.4 Application layer specific definitions

3.4.1 Application-association, association

A co-operative relationship between two applications-entities, formed by their exchange of application-protocol-control-information through their use of data link services. The relationship enables the communication of information and the co-ordination of their joint operation for an instance of communication.

3.4.2 Application context

An explicitly identified set of application-service-elements, related options and rules shared in common by two application entity-invocations that are necessary for the interworking of application-entities in an application-association.

3.4.3 Application-directory-function

An application-function that processes data link addresses, application-entity-titles, and application-protocol-addressing-information to provide mapping among these categories of information.

3.4.4 Application-entity-invocation

A specific use of part or all of the capabilities of a given application-entity in support of the communications requirements of an application-process-invocation.

3.4.5 *Application-entity-type*

A specific set (called type) of application-entity functions that share common characteristics. Such a type may be referenced with a name.

3.4.6 *Application-function*

An identifiable stand alone part of the activity of application-entities.

3.4.7 *Application-process-invocation*

A specific utilization of part or all of the capabilities of a given application-process in support of a specific occasion of information processing.

3.4.8 *Application-process-type*

A specific set (called type) of application-process functions that share common characteristics. Such a type may be referenced with a name.

3.4.9 *Application-protocol*

A set of rules and formats (semantic and syntactic) which determines the communication behaviour of application-entities in the performance of application-functions.

3.4.10 *Application-protocol-addressing-information*

Those elements of the application-protocol-control-information which contain addressing information.

3.4.11 *Application-protocol-control-information*

The information exchanged between application-entities using data link services, to co-ordinate their joint operation. This information is contained in application-protocol-data-unit.

3.4.12 *Application-protocol-data-unit*

A unit of information, specified in an application-protocol, that consists of application-protocol-control-information and, possibly, user information.

3.4.13 *Application-service-element*

A set of functions that provide a capability for the interworking of application-entity-invocations for a specific purpose on a single application-association.

NOTE – This definition refines the original definition of application-service-elements in ISO 7498, but is as specified in ISO/IEC 9545.

3.4.14 *Association-control-service-element*

An application-service-element that provides a single consistent means for establishing and terminating all application-associations.