

# Distribution automation using distribution line carrier system —

## Part 4: Data communication protocols —

### Section 32: Data link layer — Logical link control (LLC)

The European Standard EN 61334-4-32:1997 has the status of a  
British Standard

ICS 29.240.20; 35.100.20

# National foreword

This British Standard is the English language version of EN 61334-4-32:1997. It is identical with IEC 61334-4-32:1996.

The UK participation in its preparation was entrusted to Technical Committee PEL/57, Power system control and associated communications, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

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### Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 28, an inside back cover and a back cover. This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 November 1997

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ICS 35.100.20

Descriptors: Electric power, distribution automation, line carrier systems, data communication protocols, data link layer, logical link control

English version

Distribution automation using distribution line carrier  
systems  
Part 4: Data communication protocols  
Section 32: Data link layer — Logical link control (LLC)

(IEC 1334-4-32:1996)

Automatisation de la distribution  
à l'aide de systèmes de  
communication à courants porteurs  
Partie 4: Protocoles de communication de  
données  
Section 32: Couche de liaison de  
données — Contrôle de liaison  
logique (LLC)  
(CEI 1334-4-32:1996)

Verteilungsautomatisierung mit Hilfe  
von Trägersystemen auf  
Verteilungsleitungen  
Teil 4: Datenkommunikationsprotokolle  
Hauptabschnitt 32: Sicherungsschicht,  
Steuerung logischer Verbindungen (LLC)  
(IEC 1334-4-32:1996)

This European Standard was approved by CENELEC on 1996-10-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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## CENELEC

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

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

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## Foreword

The text of document 57/266/FDIS, future edition 1 of IEC 1334-4-32, 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 61334-4-32 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.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

## Endorsement notice

The text of the International Standard IEC 1334-4-32:1996 was approved by CENELEC as a European Standard without any modification.

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## 1 General

### 1.1 Scope and object

This section of IEC 1334-4 covers the services required of, or by, the DCP Logical Link Control (LLC) sublayer entity at the logical interfaces with the application layer and the MAC sublayer.

In general, the services of a layer (or a sublayer) are the capabilities which it offers to a user in the next layer. In order to provide its service, a layer (or a sublayer) builds its functions on the services which it requires from the next lower layer or sublayer.

Services are specified by describing the information flow between the application layer and the MAC-sublayer. That is by describing the service primitives and parameters which characterize each service.

These primitives are associated with the connectionless transmission.

NOTE 1 This section refers to the three-layer reference model described in IEC 1334-4-1 but provisions are made for future extensions of this model to more than three layers.

NOTE 2 Provisions are also made in this section for future extensions to connection oriented transmission.

In this clause, reference is made to the OSI reference model ISO 7498.

### 1.2 Normative references

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*.

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

## 2 LLC service specification

This clause specifies the services required of the LLC sublayer by the application layer, as viewed from the application layer, to allow a local application layer entity to exchange packets with remote peer application layer entities using DCP LLC operations at the logical link control sublayer. The services are described in an abstract way.

### 2.1 Overview of interactions

#### 2.1.1 Basic services

Three ground services are proposed as usual in the OSI model for the main transmission purposes:

- DL\_Data.request
- DL\_Data.confirm
- DL\_Data.indication

These services are non-acknowledged and in connectionless mode.

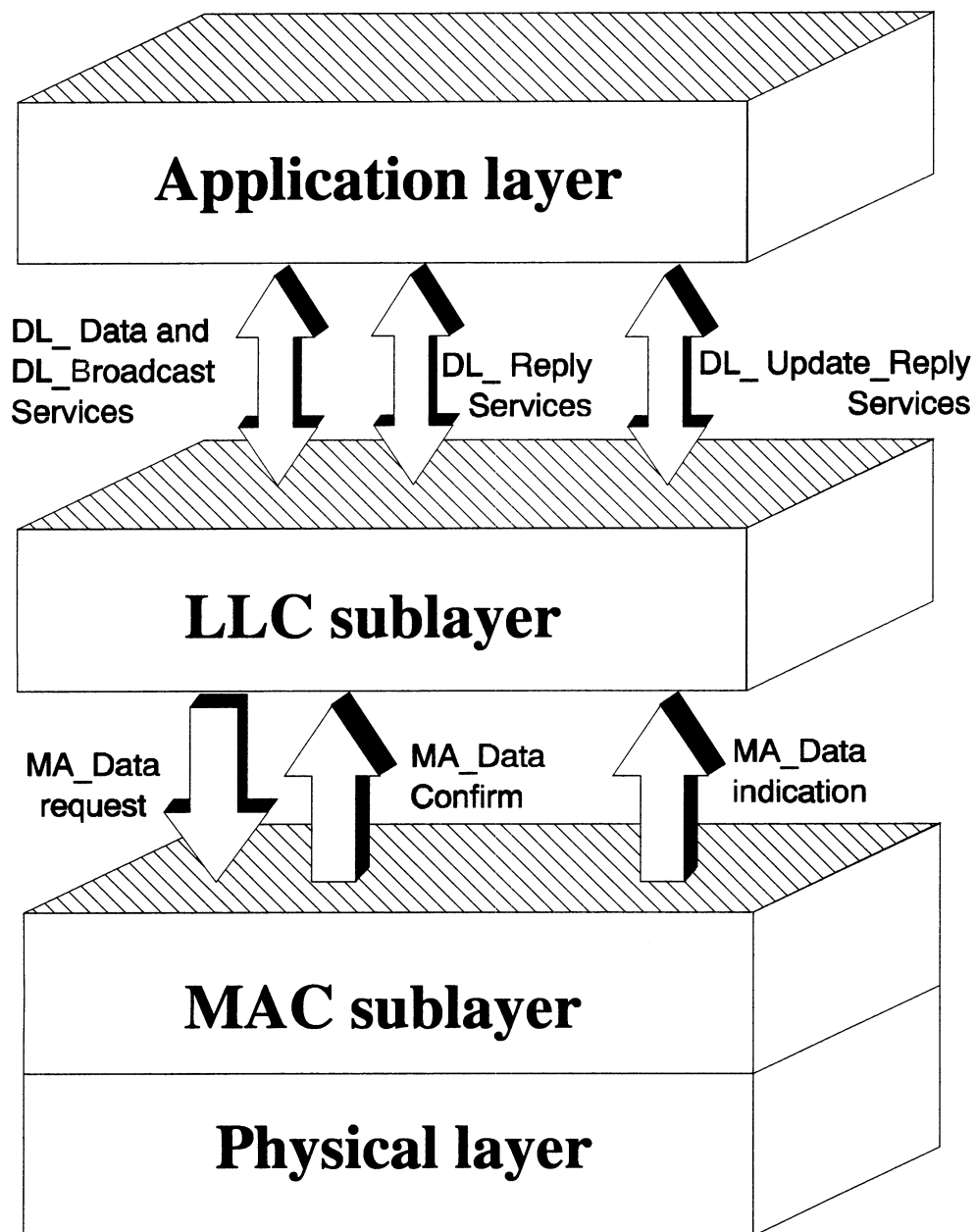
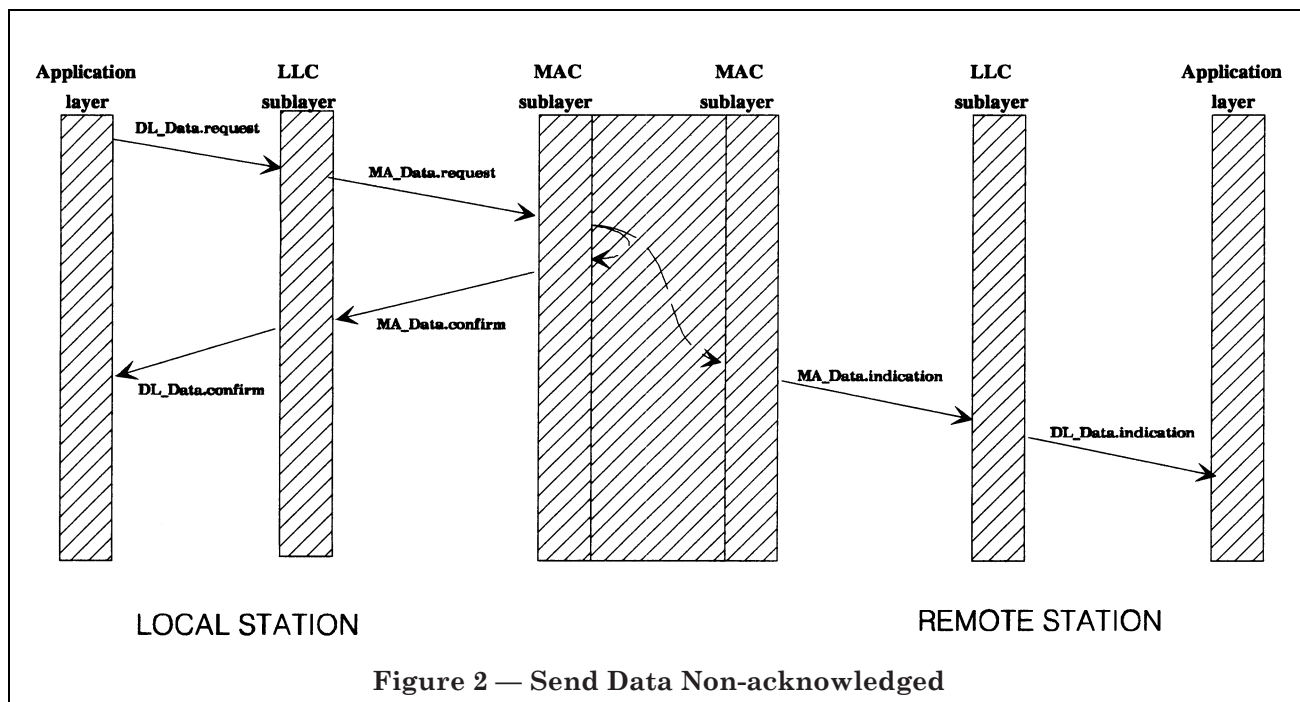


Figure 1 — Relationship to reference model



### 2.1.2 Unsolicited services

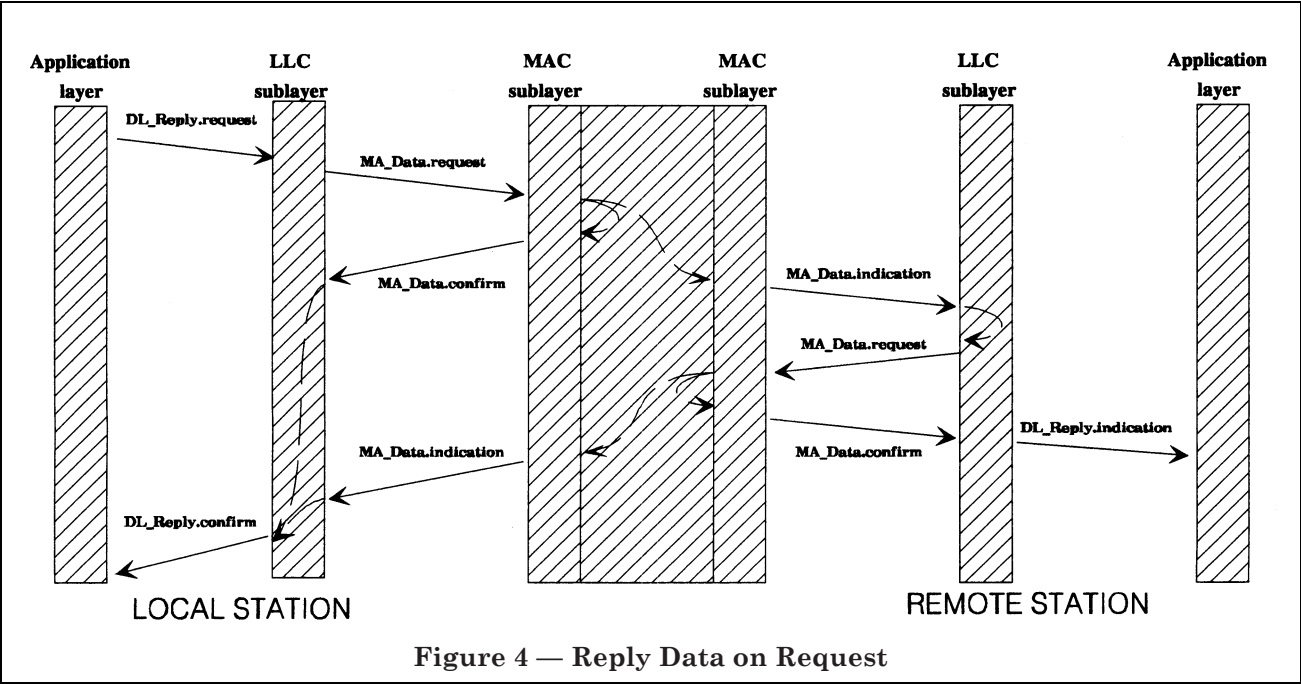
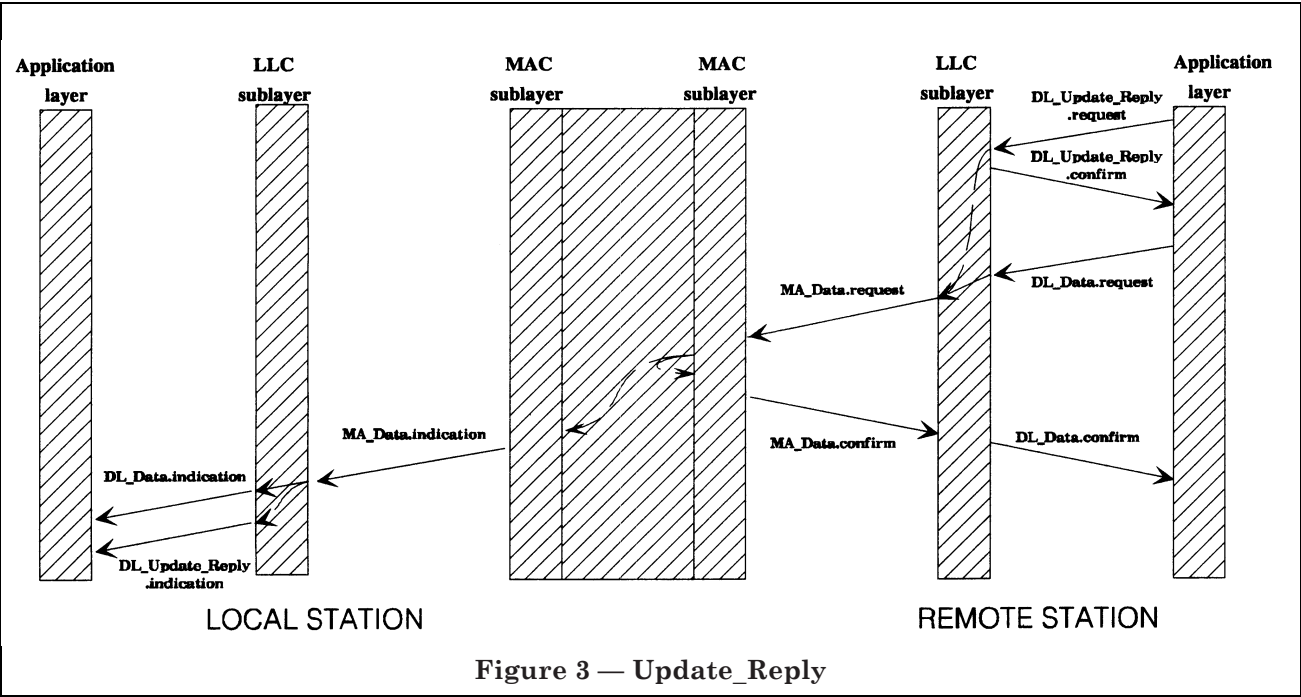
Six services are proposed for providing facilities to transfer unsolicited L\_SDU between a remote application layer entity and the local application layer entity:

- DL\_Reply.request
- DL\_Reply.indication
- DL\_Reply.confirm

The DL\_Reply.services are designed for asking the remote LLC sublayer entity to send a previously prepared L\_SDU.

- DL\_Update\_Reply.request
- DL\_Update\_Reply.indication
- DL\_Update\_Reply.confirm

The DL\_Update\_Reply services are designed to prepare DL\_Reply services.



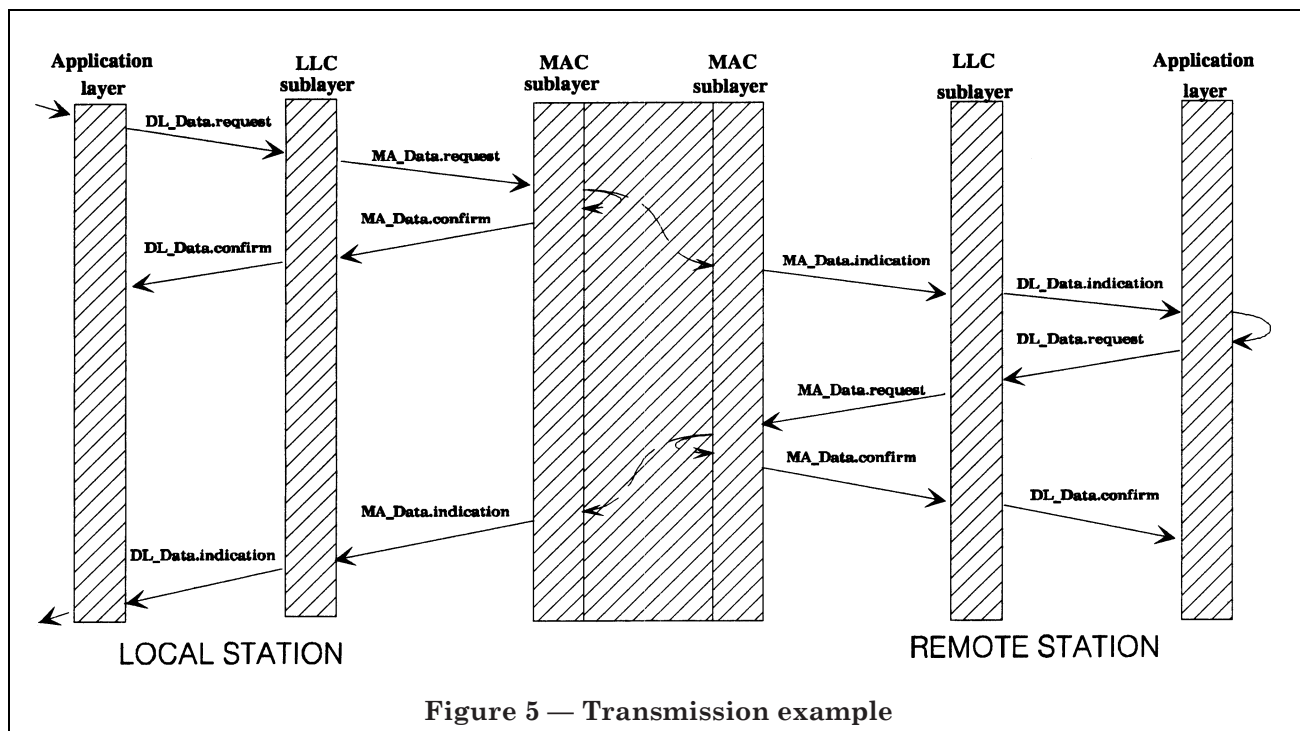


Figure 5 — Transmission example

### 2.1.3 Management service

One service is provided for management purposes:

- DL\_Broadcast.request

This service uses the broadcast facilities available at the MAC sublayer entity. This service is used to transmit very few data to all peer LLC sublayer entities.

## 2.2 DL\_Data.request

### 2.2.1 Function

The DL\_Data.request primitive is passed to the LLC sublayer entity to request that an L\_SDU be sent to a remote LLC sublayer entity or entities using the LLC transmission procedures.

### 2.2.2 Structure

The semantics of the primitive are as follows:

```
DL_Data.request (
    Destination_LSAP,
    Source_LSAP,
    Destination_address,
    L_SDU,
    Link_class
)
```

The Source\_LSAP and Destination\_LSAP parameters specify the local and remote LSAPs involved in the data unit transmission.

The Destination\_address parameter specifies the address of the remote station involved in the data unit transmission.

The L\_SDU parameter specifies the link data unit to be transferred by the LLC sublayer entity to the peer LLC sublayer entity or entities.

The Link\_class parameter is reserved for future DL\_Data transfer service extension.