

**E C M A**

**EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION**

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**STANDARD ECMA-141**

**PRIVATE TELECOMMUNICATION NETWORKS**

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**INTER-EXCHANGE SIGNALLING**

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**DATA LINK LAYER PROTOCOL**

**(PTN QSIG-L2)**



## **Brief History**

This Standard is one of a series of ECMA standards defining services and signalling protocols applicable to Private Telecommunication Networks (PTNs). The series uses the ISDN concepts as developed by the ITU-TS and is also within the framework of standards for open systems interconnection as defined by ISO. It has been produced under ITSTC work item M-IT-05 5.1.1.

This particular Standard specifies the symmetrical application for inter-PTNX use of ETS 300 125. It is intended to cover the period prior to the inclusion of this application in ETS 300 125.

This Standard is based upon the practical experience of ECMA member companies and the results of their active and continuous participation in the work of ISO/IEC JTC1, ITU-TS, ETSI and other international and national standardization bodies. It represents a pragmatic and widely based consensus.

Compared to the 1st Edition of Standard ECMA-141 (published by ECMA in June 1990), various changes have been made in order to achieve alignment with I-ETS 300 170 (which is based on the 1st Edition of ECMA-141 but modified during Public Enquiry and published by ETSI in December 1992).



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## 1 Scope

This Standard specifies a symmetrical application for inter-PTNX use of the Data Link Layer Protocol specified in ETS 300 125. It can be applicable to certain scenarios which provide a continuous bit stream channel for signalling purposes between two PTNXs, and will be referenced from the standards that specify the scenarios concerned.

## 2 References

|             |   |
|-------------|---|
| ETS 300 172 | Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Circuit mode basic services (1992)   |
| ETS 300 125 | Integrated Services Digital Network (ISDN); User-network interface data link layer specification, Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441 (1992) |
| ENV 41007-1 | Definition of terms in private telecommunication networks, Part 1: Definition of general terms (1991)   |

## 3 Definitions and acronyms

### 3.1 Definitions

The following terms used in the text of ETS 300 125 shall be interpreted as shown in table 2:

**Table 1 - ETS 300 125 Terminology Interpretation**

|             |          |
|-------------|----------|
| ETS 300 125 | ECMA-141 |
| User        | Slave    |
| Network     | Master   |

In addition to the definitions already given in ETS 300 125, the following shall apply for the purpose of this Standard:

#### 3.1.1 Master

The Data Link entity which provides the functionality of the "network" as described in ETS 300 125 for a particular Data Link.

#### 3.1.2 Slave

The Data Link entity which provides the functionality of the "user" as described in ETS 300 125 for a particular Data Link.

### 3.2 Acronyms

|      |  |
|------|--|
| C/R  | Command/Response                       |
| CME  | Connection Management Entity           |
| DISC | Disconnect                             |
| DLCI | Data Link Connection Identifier        |
| DLE  | Data Link Entity                       |
| DM   | Disconnected Mode                      |
| FCS  | Frame Check Sequence                   |
| FRMR | FRaMe Reject                           |
| ISDN | Integrated Services Digital Network    |
| LAPB | Link Access Procedure on the D-channel |
| LME  | Layer Management Entity                |
| N(R) | Receive Sequence Number                |
| N(S) | Send Sequence Number                   |
| P/F  | Poll/Final                             |

|       |  |
|-------|--|
| PTN   | Private Telecommunication Network          |
| PTNX  | Private Telecommunication Network Exchange |
| REJ   | Reject                                     |
| RNR   | Receive Not Ready                          |
| RR    | Receive Ready                              |
| SABME | Set Asynchronous Balanced Mode Extended    |
| SAP   | Service Access Point                       |
| SAPI  | Service Access Point Identifier            |
| TEI   | Terminal Endpoint Identifier               |
| UA    | Un-numbered Acknowledgement                |
| UI    | Un-numbered Information                    |
| XID   | eXchange IDentification                    |

## 4 Concepts and terminology

### 4.1 General

The concepts and terminology described in clause 2 of ETS 300 125 Part 1 shall apply with the following addition.

- All data link entities at one end of a particular inter-PTNX signalling channel shall be designated as either 'master' or 'slave'.
- PTNXs conforming to this Standard shall be capable of providing both master and slave functions on different inter-PTNX signalling channels. Thus, the configuration shown in figure 1 may exist.

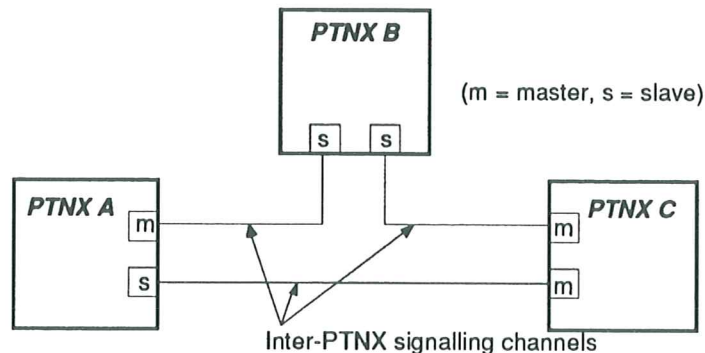


Figure 1 - Example of PTNX configuration

The assignment of the master or slave shall occur on initialisation (or reinitialisation) of the inter-PTNX signalling channels and the designation shall be decided at network configuration time. The assignment of master/slave relationships at the Data Link Layer shall not preclude different master/slave relationships at other layers in the OSI model.

### 4.2 Data Link Connection Identification (DLCI)

Clause 3.4.1 of ETS 300 125 Part 1 shall apply with the following exception:

Automatic TEI-assignment procedures shall not be used by equipment conforming to this Standard.

### 4.3 Data Link States

A point to point Data Link Entity shall use only two of the three basic states defined in clause 3.4.2 of ETS 300 125 Part 1:

- The TEI-assigned state. In this state, a TEI value has been assigned. Acknowledged information transfer is not possible in this state; or
- The multiple-frame-established state. This state is established by means of the multiple frame establishment procedure. Acknowledged information transfer is possible in this state.

*NOTE 1*

*For the detailed description of Data Link procedures, an expansion of the basic set of states listed above is required. The TEI unassigned state defined in clause 3.4.2 of ETS 300 125 Part 1 is not used in this Standard because only non-automatic (i.e. fixed) TEI values are used.*

**4.4 Service characteristics**

**4.4.1 General**

Clause 4.1 of ETS 300 125 Part 1 shall apply.

**4.4.2 Service provided to Layer 3**

Clause 4.2 of ETS 300 125 Part 1 and its sub-clauses shall apply with the exception that the Unacknowledged information Transfer Service and associated primitives (DL\_UNIT\_DATA) are not part of this Standard.

**4.4.3 Services provided to Layer Management**

In equipment conforming to this Standard, all Layer management functions shall be performed locally. Therefore no links for peer to peer management information are required.

**4.4.4 Administrative services**

The procedures for assignment, checking and removal of TEIs referenced in clause 4.4 of ETS 300 125 Part 1 shall apply internally, but not on a peer to peer basis, to PTNXs conforming to this Standard. The following primitives are, however, defined:

(i) MDL\_ASSIGN\_REQUEST

The primitive is used by the Layer Management Entity (LME) to deliver to the Data Link Entity (DLE) the TEI value that is to be used for communication.

(ii) MDL\_ERROR\_INDICATION/RESPONSE

These primitives are used to report error situations between layer management and the Data Link Layer entities.

**4.4.5 Services required from the Physical Layer**

Clause 4.6 of ETS 300 125 Part 1 shall apply.

**5 Frame structure for peer to peer communication**

**5.1 General**

Clause 2.1 of ETS 300 125 Part 2 shall apply.

**5.2 Flag sequence**

Clause 2.2 of ETS 300 125 Part 2 shall apply.

**5.3 Address field**

The address field shall consist of two octets as illustrated in figure 1 of ETS 300 125 Part 2. The address field identifies the intended receiver of the command frame and the transmitter of a response frame. The format of the address field is defined in clause 6.2 of this Standard.

**5.4 Control field**

Clause 2.4 of ETS 300 125 Part 2 shall apply.

**5.5 Information field**

Clause 2.5 of ETS 300 125 Part 2 shall apply.

**5.6 Transparency**

Clause 2.6 of ETS 300 125 Part 2 shall apply.

**5.7 Frame Check Sequence (FCS) field**

Clause 2.7 of ETS 300 125 Part 2 shall apply.

**5.8 Format convention**

Clause 2.8 of ETS 300 125 Part 2 and its subclauses shall apply.

**5.9 Invalid frames**

Clause 2.9 of ETS 300 125 Part 2 shall apply.

**5.10 Frame abort**

Clause 2.10 of ETS 300 125 Part 2 shall apply.

**6 Elements of procedures and formats of fields for Data Link Layer peer to peer communication**

**6.1 General**

Clause 3.1 of ETS 300 125 Part 2 shall apply.

**6.2 Address field format**

Clause 3.2 of ETS 300 125 Part 2 shall apply.

**6.3 Address field variables**

**6.3.1 Address Field Extension Bit (EA)**

Clause 3.3.1 of ETS 300 125 Part 2 shall apply.

**6.3.2 Command Response Field Bit (C/R)**

The C/R bit identifies a frame as either a command or response. In the case of the interconnection of two PTNXs, the setting of the C/R bit for a particular data link depends on the assignment of "master" and "slave" sides of the inter-PTNX signalling channel. The coding of the C/R bit is shown in table 2 below.

**Table 2 - C/R Field Bit Usage**

| Command / Response | Direction                 | C/R Value |
|--------------------|---------------------------|-----------|
| Command            | master side to slave side | 1         |
|                    | slave side to master side | 0         |
| Response           | master side to slave side | 0         |
|                    | slave side to master side | 1         |

**6.3.3 Service Access Point Identifier (SAPI)**

Clause 3.3.3 of ETS 300 125 Part 2 shall apply with the exception that the use of any SAPI value other than 0 (e.g. 16 for X.25 packet mode) is beyond the scope of this Standard.

**6.3.4 Terminal Endpoint Identifier (TEI)**

A TEI is associated with a specific point to point data link between two PTNXs. The TEI value used by equipment conforming to this Standard shall be the value ZERO. The use of TEI values other than 0 are beyond the scope of this Standard. PTNXs conforming to this Standard shall assign the value TEI = 0 independently at each end of a particular inter-PTNX signalling channel.

**6.4 Control field format**

Clause 3.4 of ETS 300 125 Part 2 and its subclauses shall apply.

**6.5 Control field parameters and associated state variables**

Clause 3.5 of ETS 300 125 Part 2 and its subclauses shall apply.

## 6.6 Frame types

### 6.6.1 Commands and responses

Clause 3.6.1 of ETS 300 125 Part 2 shall apply with the exception that the UI-command and XID-command/-response frames (defined in table 5 of ETS 300 125 Part 2) shall be considered undefined for the purpose of this Standard.

### 6.6.2 Information (I) command

Clause 3.6.2 of ETS 300 125 Part 2 shall apply.

### 6.6.3 Set Asynchronous Balanced Mode Extended (SABME) command

Clause 3.6.3 of ETS 300 125 Part 2 shall apply.

### 6.6.4 Disconnect (DISC) command

Clause 3.6.4 of ETS 300 125 Part 2 shall apply.

### 6.6.5 Unnumbered Information (UI) command

UI frames (as defined in clause 3.6.5 of ETS 300 125 Part 2) are used for the unacknowledged information transfer service which is not supported by this Standard.

### 6.6.6 Receive Ready (RR) command/response

Clause 3.6.6 of ETS 300 125 Part 2 shall apply.

### 6.6.7 Reject (REJ) command/response

Clause 3.6.7 of ETS 300 125 Part 2 shall apply.

### 6.6.8 Receive Not Ready (RNR) command/response

Clause 3.6.8 of ETS 300 125 Part 2 shall apply.

### 6.6.9 Unnumbered Acknowledgement (UA) response

Clause 3.6.9 of ETS 300 125 Part 2 shall apply.

### 6.6.10 Disconnected Mode (DM) response

Clause 3.6.10 of ETS 300 125 Part 2 shall apply.

### 6.6.11 Frame Reject (FRMR) response

Clause 3.6.11 of ETS 300 125 Part 2 shall apply.

### 6.6.12 Exchange Identification (XID) command/response

XID frames (as defined in clause 3.6.12 of ETS 300 125 Part 2) are not supported by this Standard.

## 7 Elements for Layer to Layer communication

### 7.1 General

Clause 4.1 of ETS 300 125 Part 2 shall apply except the following generic primitive types which are not part of this Standard:

|                 |  |
|-----------------|--|
| DL_UNIT_DATA    | for the support of unacknowledged information transfer.                  |
| MDL_UNIT_DATA   | for the support of peer to peer layer management information procedures. |
| MDL_XID         | for the support of parameter negotiation procedures.                     |
| MPH_ACTIVATE    | not applicable to the Data Link Layer.                                   |
| MPH_DEACTIVATE  | not applicable to the Data Link Layer.                                   |
| MPH_INFORMATION | not applicable to the Data Link Layer.                                   |

## **7.2 Primitive procedures**

### **7.2.1 General**

Clause 4.2.1 of ETS 300 125 Part 2 shall apply.

### **7.2.2 Layer 3 - Data Link Layer interactions**

Clause 4.2.2 of ETS 300 125 Part 2 shall apply with the exception that the Data Link Connection Identifier (DLCI) state "information transfer" defined in support of broadcast data link procedures is not part of this Standard. Figure 8 of ETS 300 125 Part 2 shall apply, with the exception of the state transitions as a result of the receipt of the DL\_UNIT\_DATA\_REQUEST/INDICATION primitives.

## **8 Definition of the peer to peer procedures of the Data Link Layer**

Clause 5 of ETS 300 125 Part 2 shall apply, with the exception that neither the unacknowledged information transfer nor the connection management information transfer procedures are part of this Standard.

### **8.1 Procedures for the use of the P/F Bit**

Clause 5.1.2 of ETS 300 125 Part 2 shall apply.

### **8.2 Procedures for Unacknowledged Information Transfer**

The procedures for Unacknowledged Information Transfer as defined in clause 5.2 of ETS 300 125 Part 2 are not part of this Standard.

### **8.3 Terminal Endpoint Identifier (TEI) Management procedures**

#### **8.3.1 General**

PTNXs conforming to this Standard shall implement non-automatic TEI assignment procedures. The TEI Management procedures defined in the following clauses are defined internally to the PTNX as no peer to peer management information transfer procedures are part of this Standard.

The applicability of automatic TEI assignment procedures and peer to peer management information transfer to PTNX interconnection scenarios shall not be used by equipment conforming to this Standard.

#### **8.3.2 TEI Assignment procedures**

The TEI value to be used for a particular data link shall be delivered by the Layer Management Entity (LME) to the Data Link Layer entity via the MDL\_ASSIGN\_REQUEST primitive.

#### **8.3.3 TEI Check procedures**

The procedures defined in clause 5.3.3 of ETS 300 125 Part 2 to enable checking of a previously assigned TEI value are not part of this Standard. Equipment conforming to this Standard shall only implement non-automatic (i.e. fixed) TEI assignment procedures and therefore, on a physical point to point connection, multiple TEI assignment cannot occur.

#### **8.3.4 TEI Removal procedures**

The procedures defined in clause 5.3.4 of ETS 300 125 Part 2 to enable removal of a previously assigned TEI value are not part of this Standard. Equipment conforming to this Standard may initiate TEI removal procedures internally.

#### **8.3.5 TEI Identify Verify procedures**

The procedures defined in clause 5.3.5 of ETS 300 125 Part 2 to enable checking of a previously assigned TEI value are not part of this Standard.

#### **8.3.6 Formats and codes**

As no peer to peer messages are defined in this Standard for the support of management procedures, the format and codes defined in clause 5.3.6 of ETS 300 125 Part 2 are not part of this Standard.

### **8.4 Automatic negotiation of Data Link Layer parameters**

The procedures described in appendix IV of ETS 300 125 Part 2 are not part of this Standard.

**8.5 Procedures for establishment and release of multiple frame operation**

The provision of extended multiple frame operation (modulo 128 sequencing) shall be supported by equipment conforming to this Standard.

**8.5.1 Establishment of multiple frame operation**

Clause 5.5.1 of ETS 300 125 Part 2 shall apply.

**8.5.2 Information transfer**

Clause 5.5.2 of ETS 300 125 Part 2 shall apply.

**8.5.3 Termination of multiple frame operation**

Clause 5.5.3 of ETS 300 125 Part 2 shall apply.

**8.5.4 TEI-assigned state**

Clause 5.5.4 of ETS 300 125 Part 2 shall apply.

**8.5.5 Collision of unnumbered commands and responses**

Clause 5.5.5 of ETS 300 125 Part 2 shall apply.

**8.5.6 Unsolicited DM response and SABME or DISC command**

Clause 5.5.6 of ETS 300 125 Part 2 shall apply with the exception that equipment supporting Link Access Procedure on the D-channel (LAPB) protocol procedures is beyond the scope of this Standard.

**8.6 Procedures for information transfer in multiple frame operation**

Clause 5.6 of ETS 300 125 Part 2 shall apply.

**8.6.1 Transmitting I frames**

Clause 5.6.1 of ETS 300 125 Part 2 shall apply.

**8.6.2 Receiving I frames**

Clause 5.6.2 of ETS 300 125 Part 2 shall apply.

**8.6.3 Sending and receiving acknowledgements**

Clause 5.6.3 of ETS 300 125 Part 2 shall apply.

**8.6.4 Receiving REJ frames**

Clause 5.6.4 of ETS 300 125 Part 2 shall apply.

**8.6.5 Receiving RNR frames**

Clause 5.6.5 of ETS 300 125 Part 2 shall apply.

**8.6.6 Data Link Layer own receiver busy condition**

Clause 5.6.6 of ETS 300 125 Part 2 shall apply.

**8.6.7 Waiting acknowledgement**

Clause 5.6.7 of ETS 300 125 Part 2 shall apply.

**8.7 Re-establishment of multiple frame operation**

**8.7.1 Criteria for Re-establishment**

Clause 5.7.1 of ETS 300 125 Part 2 shall apply.

**8.7.2 Procedures**

Clause 5.7.2 of ETS 300 125 Part 2 shall apply.

**8.8 Exception conditions reporting and recovery**

Clause 5.8 of ETS 300 125 Part 2 shall apply with the exception that the optional procedures of appendix I of ETS 300 125 Part 2 are not part of this Standard. In addition, the procedures described in appendix II of ETS 300 125 Part 2 are defined in annex A of this Standard.

**8.8.1 N(S) sequence error**  
Clause 5.8.1 of ETS 300 125 Part 2 shall apply.

**8.8.2 N(R) sequence error**  
Clause 5.8.2 of ETS 300 125 Part 2 shall apply.

**8.8.3 Timer recovery condition**  
Clause 5.8.3 of ETS 300 125 Part 2 shall apply.

**8.8.4 Invalid frame condition**  
Clause 5.8.4 of ETS 300 125 Part 2 shall apply.

**8.8.5 Frame rejection condition**  
Clause 5.8.5 of ETS 300 125 Part 2 shall apply.

**8.8.6 Receipt of an FRMR response frame**  
Clause 5.8.6 of ETS 300 125 Part 2 shall apply.

**8.8.7 Unsolicited response frames**  
Clause 5.8.7 of ETS 300 125 Part 2 shall apply.

**8.8.8 Multiple assignment of a TEI value**  
Clause 5.8.8 of ETS 300 125 Part 2 shall apply.

**NOTE 2**

*As equipment conforming to this Standard will only implement non-automatic TEI-assignment procedures, on a single data link connection, multiple TEI assignment cannot occur.*

**8.9 List of system parameters**  
Clause 5.9 of ETS 300 125 Part 2 shall apply with the following exceptions:

- i) N202 and Timers T201 and T202 are not part of this Standard;
- ii) The maximum number of outstanding I frames (k) shall have a value of 7 where a signalling channel of greater than or equal to 64 kbit/s is used and shall have a value of 3 where a signalling channel of less than 64 kbit/s is used.

Additional values of k may be used on particular inter-PTNX links by special arrangement between the two PTNXs.

**8.10 Data Link Layer monitor function**  
The procedures described in clause 5.10 of ETS 300 125 Part 2 are mandatory for equipment conforming to this Standard.



**Annex A**  
(Informative)

**Occurrence of the MDL\_ERROR\_INDICATION primitive**

**A.1 Introduction**

Table A.1 (derived from table II-1 of ETS 300 125) describes the error situations in which the MDL\_ERROR\_INDICATION primitive will be generated. This primitive notifies the Data Link Layer's connection management entity of the occurred error situation. The table has been adapted from that in appendix II of ETS 300 125 Part 2 to reflect the peer to peer nature of the configuration of PTNXs conforming to this Standard.

**A.2 Layout of table A.1**

The entries in the various columns of table A.1 should be interpreted as indicated in this clause.

The "Error Code" column gives the identification value of each error condition which will be included as a parameter with the MDL\_ERROR\_INDICATION primitive.

The "Error Condition" column in conjunction with the "Affected States" column describe unique protocol error events and the basic state of the Data Link entity at the point that the MDL\_ERROR\_INDICATION primitive will be generated.

The columns entitled "Master management action" and "Slave management action" indicate the preferred action to be taken with in the PTNX concerned. The actions for Master and Slave Data Link configurations are identical.

**A.3 Preferred management actions**

In general, the "error log" described in table A.1 to be undertaken on receipt of the MDL\_ERROR\_INDICATION primitive is an implementation option.

**Table A.1 - Master and Slave management actions for MDL\_ERROR\_INDICATIONs**

| Error Type                               | Error Code    | Error Condition                               | Affected States | Master management Action   | Slave management Action  |
|--|---------------|---|-----------------|--|--|
| Receipt of unsolicited Response          | A             | Supervisory (F=1)                             | 7               | Error Log  | Error Log  |
|  | B             | DM (F=1)                                      | 7,8             | Error Log  | Error Log  |
|  | C             | UA (F=1)                                      | 4,7,8           | Error Log  | Error Log  |
|  | D             | UA (F=0)                                      | 4,5,6,7,8       |  |  |
|  | E             | DM (F=0)                                      | 7,8             | Error Log  | Error Log  |
| Peer Initiated Establishment             | F             | SABME   | 7,8             | Error Log  | Error Log  |
| Unsuccessful retransmission (N200 times) | G             | SABME   | 7,8             | Indication that maintenance action is required since layer 2 is unable to provide services | Indication that maintenance action is required since layer 2 is unable to provide services |
|  | H             | SABME   | 6               |  |  |
|  | I             | Status Enquiry                                | 8               |  |  |
| Other                                    | J             | N(R) Error                                    | 7,8             | Error Log  | Error Log  |
|  | K<br>Note A.1 | Receipt of FRMR response                      | 7,8             | Error Log  | Error Log  |
|  | L             | Receipt of frame with undefined control field | 4,5,6,7,8       | Error Log  | Error Log  |
|  | M             | Receipt of I field not permitted              | 4,5,6,7,8       | Note A.2   | Note A.2   |
|  | N             | Receipt of frame with wrong size              | 4,5,6,7,8       | Error Log  | Error Log  |
|  | O             | N201 Error                                    | 4,5,6,7,8       | Error Log  | Error Log  |

**NOTE A.1**

*The FRMR response will not be transmitted by a Data Link Layer entity conforming to this Standard.*

**NOTE A.2**

*According to clause 5.8.5 of ETS 300 125 Part 2 this error code will never be generated.*

**Annex B**  
(Informative)

**SDL for Point to Point Procedures**

The example SDL diagram shown in annex B of ETS 300 125 Part 2 is also relevant for this Standard, with the following exceptions:

- i) In figure B-7 (8 of 10), note 2; the procedures described in appendix 1 of ETS 300 125 Part 2 are not applicable to equipment conforming to this Standard.
- ii) In figure B-8 (7 of 9), note 2; the procedures described in appendix 1 of ETS 300 125 Part 2 are not applicable to equipment conforming to this Standard.



**Annex C**  
(Informative)

**State Transition Tables For Point to Point Procedures**

The state transition tables given in annex D of ETS 300 125 Part 2 may also be used to provide additional clarification of the procedures described in this Standard.

In case of conflict between the state diagrams shown in annex D of ETS 300 125 Part 2 and the text of the normative clauses of this Standard, the latter shall take precedence over the former.



**Annex D**  
**(Informative)**

**Overview of the functions and procedures of the Data Link Layer**

**D.1 General**

All Data Link Layer messages are transmitted in frames which are delimited by flags. (A flag is a unique bit pattern.) The frame structure is defined in clause 5.

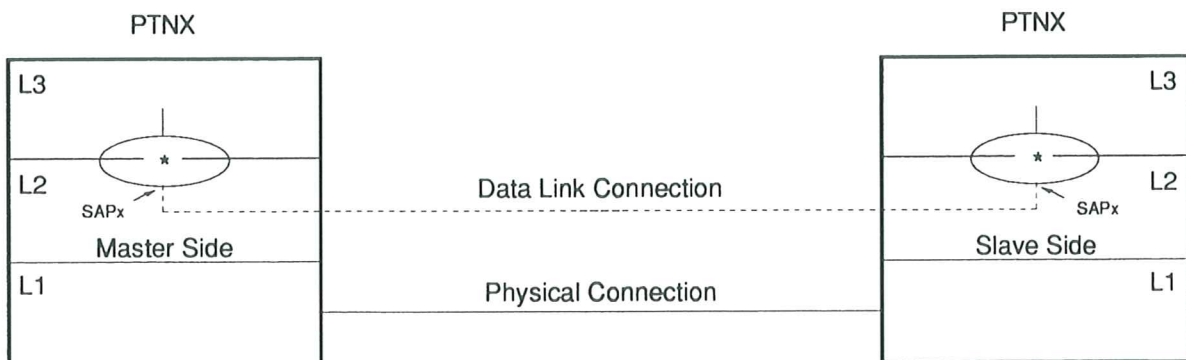
The Data Link Layer protocol (as defined in this Standard) includes functions for:

- frame delimiting, alignment and transparency, allowing recognition of a sequence of bits transmitted over a signalling channel as a frame;
- sequence control, to maintain the sequential order of frames across a data link connection;
- detection of transmission, format and operational errors on a data link connection;
- recovery from detected transmission, format and operational errors;
- notification to the management entity of unrecoverable errors; and
- flow control.

Data Link Layer functions (as defined in this Standard) provide the means for information transfer via point to point data link connections. In this case frames are directed onto a single endpoint.

Figure D.1 shows point to point information transfer in the case of two interconnected PTNXs and depicts the point to point nature of both layers 1 and 2.

Only acknowledged transfer of Layer 3 information is defined as part of this Standard. Unacknowledged information transfer at the Data Link Layer is not used by equipment conforming to this Standard.



**Figure D.1 - Point to Point Data Link Connection**

**D.2 Overview Of Data Link Layer structure**

**D.2.1 Data Link procedure**

Clause 5.1 of ETS 300 125 Part 1 is applicable.

**D.2.2 Multiplex Procedure**

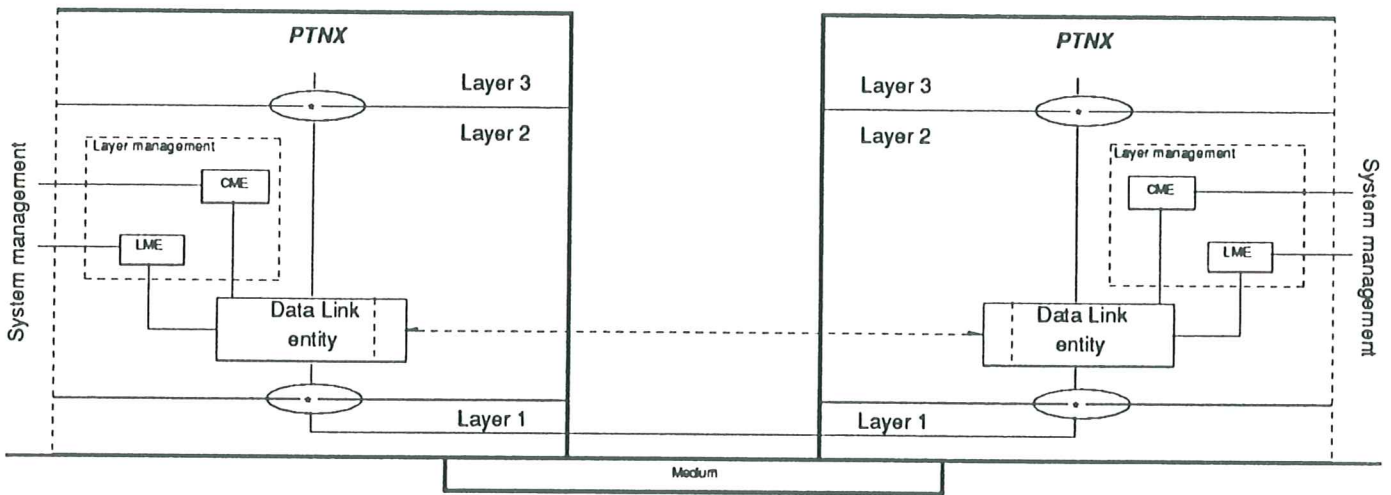
Clause 5.2 of ETS 300 125 Part 1 is applicable.

**D.2.3 Structure of the Data Link procedure & management function**

The functional model of the data link procedure (including management functions) is shown in figure D.2. This figure is shown for informative purposes only and is not intended to constrain implementations.

The layer management entity (LME) provides for the management of resources that have a layer wide impact. Access to the LME is provided by means of a specific SAPI.

The connection management entity (CME) provides for the management of resources that have an impact on individual connections.



**Figure D.2 - Functional Model of Data Link Layer structure**



