
**Information technology —
Telecommunications and information
exchange between systems — List of
standard data link layer protocols that
utilize high-level data link control (HDLC)
classes of procedures, list of standard XID
format identifiers, list of standard
mode-setting information field format
identifiers, and list of standard user-defined
parameter set identification values**

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Technologies de l'information — Télécommunications et échange d'information entre systèmes — Liste de protocoles normalisés pour la couche liaison de données employant des classes de procédures de commande de liaison de données à haut niveau (HDLC) et liste d'identificateurs normalisés de format XID, liste d'identificateurs normalisés de format du champ d'information pour la programmation de mode et liste des valeurs d'identification pour les jeux de paramètres normalisés définis par les utilisateurs

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Printed in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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

ISO/IEC TR 10171 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

This second edition cancels and replaces the first edition (ISO/IEC TR 10171:1994), which has been technically revised.

Introduction

The HDLC classes of procedures have been utilized in a number of International Standards and ITU-T Recommendations as the basis for specific data link layer protocol specifications. This Technical Report provides an indication of the class of procedures and optional functions used in the realization of each designated data link layer protocol. The protocols covered include:

- ISO/IEC 7776
- ISO/IEC 8802-2 LLC type 1
- ISO/IEC 8802-2 LLC type 2
- ITU-T Recommendation G.764
- ITU-T Recommendation Q.921 (I.441) LAPD
- ITU-T Recommendation Q.922 LAPF
- ITU-T Recommendation T.90
- ITU-T Recommendation V.42
- ITU-T Recommendation V.76
- ITU-T Recommendation V.120
- ITU-T Recommendation X.25 LAPB
- ITU-T Recommendations X.25/X.32
- ITU-T Recommendation X.75 SLP
- Internet Society Request for Comments: 1662
- IEEE TR 1550

Table 1 in this Technical Report lists these protocols, indicates the basic class of procedures used, and identifies the standard optional functions used to realize the specific data link layer protocol. The footnotes following table 1 provide additional explanation concerning the application of the optional function identified. As additional standard usages of the HDLC classes of procedures are identified, this Technical Report will be updated. This Technical Report serves as the repository of record of applications of the HDLC concepts, principles and classes of procedures in the realization of standard data link layer protocols.

Table 2 in this Technical Report serves as the repository of record for the standard XID format identifiers defined in ISO/IEC 13239.

Table 3 in this Technical Report serves as the repository of record for standard mode-setting information field format identifiers.

Table 4 in this Technical Report serves as the repository of record for the list of standard user-defined parameter set identification values defined in ISO/IEC 13239.

Information technology — Telecommunications and information exchange between systems — List of standard data link layer protocols that utilize high-level data link control (HDLC) classes of procedures, list of standard XID format identifiers, list of standard mode-setting information field format identifiers, and list of standard user-defined parameter set identification values

1 Scope

This Technical Report lists the standard data link layer protocols that utilize HDLC based classes of procedures as defined in ISO/IEC 13239 in their realization. The list indicates the basic repertoire (i.e. class of procedures) used plus the optional functions employed.

This Technical Report lists the standard XID information field format identifiers. The list identifies the source document as well as describing the characteristics of the information provided.

This Technical Report lists the standard mode-setting frame information field format identifiers. The list identifies the source document as well as describing the characteristics of the information provided.

This Technical Report lists the standard user-defined parameter set identification values, as well as indicating the source and use of the private parameter set.

NOTE - With the exception of ISO/IEC 7776 and ITU-T X.25 LAPB, which are designed to be complementary, the protocols listed do not interwork. (There are differences in the usage of certain functions by different protocols.)

2 References

ISO/IEC 7776:1995, *Information technology — Telecommunications and information exchange between systems — High-level data link control procedures — Description of the X.25 LAPB-compatible DTE data link procedures.*

ISO/IEC 8802-2:1998, *Information technology — Telecommunications and information exchange between systems — Local and metropolitan area networks — Specific requirements — Part 2: Logical link control.*

ISO/IEC 13239:2000, *Information technology — Telecommunications and information exchange between systems — High-level data link control (HDLC) procedures.*

ITU-T Recommendation G.764, *Voice packetization - Packetized voice protocols.*

ITU-T Recommendation Q.921 (I.441), *ISDN user-network interface - Data link layer specification.*

ITU-T Recommendation Q.922, *ISDN data link layer specification for frame mode bearer services.*

ITU-T Recommendation T.90, *Characteristics and protocols for terminals for telematic services in ISDN.*

ITU-T Recommendation V.42, *Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion.*

ITU-T Recommendation V.42bis, - *Data compression procedures for data circuit-terminating equipment (DCE) using error correction procedures.*

ITU-T Recommendation V.75, *DSVD terminal control procedures.*

ITU-T Recommendation V.76, *Generic multiplexer using V.42 LAPM-based procedures.*

ITU-T Recommendation V.120, *Support by an ISDN of data terminal equipment with V-series type interfaces with provision for statistical multiplexing.*

ITU-T Recommendation X.25, *Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit.*

ITU-T Recommendation X.32, *Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and accessing a packet-switched public data network through a public switched telephone network or a circuit switched public data network.*

ITU-T Recommendation X.75, *Packet-switched signalling system between public networks providing data transmission services.*

Internet Society Request for Comments: 1662, *PPP in HDLC-like Framing.*

IEEE TR 1550, *Utility commission architecture, Version 2.0.*

NOTE 1 - Further study is required to determine the applicability of including ITU-T Recommendations T.30, T.70, T.71, and Signaling System No. 7 Link Layer Recommendations in this Technical Report.

NOTE 2 - As soon as the document that provide the protocol description of ADLC is identified, IEEE TR 1550 will be replaced with that information.

3 Abbreviations

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ADLC	Asynchronous Data Link Control
DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
FCS	Frame Check Sequence
HDLC	High-level Data Link Control
I	Information
IETF	Internet Engineering Task Force
ISDN	Integrated Services Digital Network
ITU-T	International Telecommunication Union - Telecommunication standardization sector (formerly CCITT)
LAPB	Link Access Procedures Balanced
LAPD	Link Access Protocol on the D-Channel
LAPM	Link Access Protocol for Modems
LLC	Logical Link Control
MAC	Medium Access Control
OSI	Open Systems Interconnection
PPP	Point-to-Point Protocol
RD	Request Disconnect
REJ	REJect
RIM	Request Initialization Mode
RSET	ReSET
SIM	Set Initialization Mode
SLP	Single Link Procedures
SM	Set Mode
SREJ	Selective REJect
TEST	Test
UI	Unnumbered Information
UIH	Unnumbered Information with Header check
UP	Unnumbered Polling
XID	eXchange IDentification

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4 Data Link Layer protocols using HDLC classes of procedures

Table 1 lists the data link layer protocols, indicates the basic class of procedures used, and identifies the standard optional functions used to realize the specific data link layer protocol. The footnotes following table 1 provide additional explanation concerning the application of the optional function identified.

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Table 1 – Applications of HDLC Classes of Procedures

	ISO/IEC 7776	ISO/IEC 8802-2 LLC ¹ type 1	ISO/IEC 8802-2 LLC ¹ type 2	ITU-T G.764 ¹¹	ITU-T Q.921 (I.441) LAPD	ITU-T Q.922 LAPF	ITU-T T.90 LAPX	ITU-T V.42 LAPM	ITU-T V.76	ITU-T V.120	ITU-T X.25 LAPB	ITU-T X.25/X.32 ¹⁰ SLP	ITU-T X.75	Internet RFC 1662	IEEE TR 1550 ²¹ ADLC
Fundamental class of procedures															
UNC Unbalanced operation normal response mode class															X
UAC Unbalanced operation asynchronous response mode class															
BAC Balanced operation asynchronous balanced mode class	X ⁹		X		X		X	X	X	X	X	X ²			
UCC Unbalanced operation Connectionless-mode class														X	
BCC Balanced operation Connectionless-mode class		X													
Optional function															
1 Add command/response: XID															
2 Add command/response: REJ	X	X	X	X	O ¹²	O ¹²	O ¹²	X ¹²	X	O	X	X	X	X	X
3.1 Add command/response: SREJ For single individual frame retransmission					X ¹⁶	X ¹⁶	X ¹⁶	O	O	O	O	O	O	O	
3.2 Add command/response: SREJ Use multi-selective reject option with individual frame indicators only															
3.3 Add command/response: SREJ Use multi-selective reject procedure using individual I-frame indicators and span-list indicators	O ¹⁶				O	O	O	O	O	O	O ¹⁴	O ¹⁴	O ¹⁴	O ¹⁴	
4 Add command/response: UI									X						
5 Add command: SIM		X ⁴													
Add response: RIM															
6 Add command: UP					X ³	X ³			X						
7 Use extended addressing format instead of basic addressing format		X ⁴	X ⁴	X	X	X		O	X	X					X ⁴
8 Delete response: I	X														
9 Delete command: I															

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ISO/IEC 7776	ISO/IEC 8802-2 LLC ¹ type 1	ISO/IEC 8802-2 LLC ¹ type 2	ITU-T G.764 ¹¹	ITU-T Q.921 (I.441) LAPD	ITU-T Q.922 LAPF	ITU-T T.90 LAPX	ITU-T V.42 LAPM	ITU-T V.76	ITU-T V.120	ITU-T X.25 LAPB	ITU-T X.25/X.32 ¹⁰	ITU-T X.75 SLP	Internet RFC 1662	IEEE TR 1550 ²¹ ADLC
O ⁵ O ^{5,19}	X O ⁷	X O ⁷	https://standards.iteh.ai/catalog/standards/sist/858588cf-56a4-44d4-9f9f-f964b9ed6ea5/iso-iec-tr-10171-2000	X	X	O	X	X	X	O ⁶ O ¹⁹	O ⁶ O ¹⁹	O O ¹⁹		X
10.1 Use modulo 128 instead of modulo 8 control field format														
10.2 Use modulo 32 768 instead of modulo 8 control field format														
10.3 Use modulo 2 147 483 648 instead of modulo 8 control field format														
11 Add command: RSET														
12 Add command/response: TEST	X													
13 Add response: RD														
14.1 Use the 32-bit FCS instead of the 16-bit FCS														
14.2 Use the 8-bit FCS instead of the 16-bit FCS														
15.1 Use start/stop transmission with basic transparency instead of synchronous transmission														
15.2 Use start/stop transmission with basic transparency and flow-control transparency instead of synchronous transmission														
15.3 Use start/stop transmission with basic transparency and control-character octet transparency instead of synchronous transmission														
16 Use seven bit transparency														
17 Use Set Mode command with optional information field in place of SXXM or SXXME														
18 Use optional information field with UA and DM response and DISC command														
19 Use optional information field with any mode-setting command frame														
20 Add command/response UIH														
21 Use multiple address fields														