

ICS 35.100.20

CCS L 78



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7421-2008

Replacing GB/T 14400-1993; GB/T 15698-1995; GB/T 7421-1987; GB/T 7496-1987; GB/T 7575-1987

**Information technology -- Telecommunications and information
exchange between systems -- High-level data link control
(HDLC) procedures**

信息技术 系统间远程通信和信息交换 高级数据链路控制 (HDLC) 规程
(English Translation)

Issued on: August 19, 2008

Implemented on: January 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

Table of Contents

Foreword	
Introduction	
1 Scope	
2 Normative references	
3 Terms, definitions and abbreviations	
3.1 Terms and definitions	
3.2 Abbreviations	
4 HDLC frame structure	
4.1 Frame format	
Section 4.2 of the frame	
4.3 Transparency	
4.4 Transmission Considerations	
4.5 Inter-frame time filling	
4.6 Invalid frame	
4.7 Expansion	
4.8 Addressing Conventions	
4.9 Frame format field	
5 HDLC Procedural Elements	
5.1 Data Link Channel Status	
5.2 Ways	
5.3 Control Field Formats	
5.4 Control field parameters	
5.5 Commands and Responses	
5.6 Abnormal Status Reporting and Recovery	
6 HDLC Procedures category	
6.1 Data Station Type	
6.2 Configuration	
6.3 Mode of operation	
6.4 Addressing Scheme	
6.5 Send and receive status variables	
6.6 Basic Procedural Categories	
6.7 Optional Features	

- 6.8 The consistency of the categories of procedures
- 6.9 In line with the HDLC protocol category
- 6.10 Means of classification and optional functions
- 6.11 Unbalanced Operation (Point to Point and Multiple Points)
- 6.12 Balance operation (point to point)
- 6.13 Unbalanced connectionless operation (point to point or more)

Foreword

This standard is identical with ISO/IEC 13239.:2002 "Information Technology Systems for Remote Communication and Information Exchange Advanced Data Link Control (HDLC) Regulations (English version).

This standard replaces GB/T 7421-1987 "Information Processing Systems Data Communication Advanced Data Link Control Regulations" GB/T 7496-1987 "Advanced data link control protocol frame structure of information processing system data communication", GB/T 7575-1987 "Data Communication Advanced Data Link Control Procedures Rules Elements Compilation", GB/T 14400-1993 "Information Processing Systems Data Communications Advanced data link control balance class procedures for the exchange of data link layer address decision/negotiation "and GB/T 15698-1995 "Information Technology Inter-system Telecommunications and Information Exchange Advanced Data Link Control Procedures General XID Frame Information Field Contents and format".

This standard and GB/T 7421-1987, GB/T 7496-1987, GB/T 7575-1987, GB/T 14400-1993 and GB/T 15698-1995 The difference is that.

--- This standard is GB/T 7421-1987, GB/T 7496-1987, GB/T 7575-1987, GB/T 14400-1993 and GB/T 15698-1995 integration;

--- This standard is named "Advanced Interlinkage Control (HDLC) for Telecommunications and Information Exchange between Information Systems Systems Process ";

--- Added HDLC frame non-basic format;

--- Added connectionless category (unbalanced connectionless category and balanced connectionless category) related content;

--- Increased start/stop transmission of the relevant content;

--- Added modal 32768 and modal 2147483648 control field formats;

--- Added some options of optional functions and the use of optional functions;

--- Increased frame inspection sequence negotiation rules.

This standard Appendix A ~ Appendix H are informative appendix.

This standard by the National Information Technology Standardization Technical Committee and focal point.

This standard was drafted. China Electronics Standardization Institute.

Introduction

Advanced Data Link Control (HDLC) procedures are designed for synchronous or on/off, transparent data transmission. Two data stations the normal period of code transparent data communication consists of the transmission of the data source to the data sink information frame and the transmission of the reverse acknowledgment frame. Usually at Before the data station containing the data source receives the acknowledgment, it should save the original information in memory for use when it needs to be retransmitted.

In those cases where it is required, the data sequence integrity between the data source and the data sink is implemented numerically. The number in this standard the provisions of the module cycle, number units to frame. The combination of each data source/data sink on the data link uses a separate numbering method.

The data sink implements the acknowledgment function by notifying the data source of the next expected sequence number. This confirmation function is available one Individual, non-informative frames or within the control fields of the informative frame.

HDLC procedures apply to unbalanced and balanced data links.

Unbalanced data link an unbalanced data link contains two or more data stations. For control purposes, there is a data station on the data link responsible for it Organize data flows and handle unrecoverable data link layer errors. The station with this responsibility is unbalanced in connection with the data the link is called the master and is called the control station in the unbalanced connectionless data link. The frame sent by the master/control station is a command frame. data the other data stations on the link are called secondary stations in the data link of the unbalanced connection mode, and are referred to as secondary stations in the data link of the unbalanced connectionless mode Help station The frame sent by the secondary station/secondary station is the response frame.

For data transmission between the master/control station and the secondary/secondary stations, two data link control scenarios are considered (see Figure A and

Figure B).

Case 1. The data station containing the data source executes the master/control station data link control function and controls the package via the select type command Data Stations with Data Stations with Secondary/Secondary Data Link Control.

Case 2. A data station containing a data sink performs master/control station data link

control functions and controls packets via interrogation commands Data station with data source with secondary/secondary data link control functions.

Information flows from the data source to the data sink, but acknowledgments are always sent in the opposite direction.

The two control situations can be combined so that two-way alternating or two-way simultaneous communications can be made on the data link.

Figure A unbalanced data link function (case 1)

Figure B Unbalanced data link function (case 2)

Balanced data links

A balanced data link contains only two data stations. For control purposes, each data station is responsible for organizing the data flow and negative Responsible for handling the irreversible data link layer error status generated in the respective initiated transmission. Each data station balances the number of connections GB/T 7421-2008/ISO/IEC 13239.:2002 According to the link are called combined stations, both in the balanced connectionless data link are called peer stations. They both send and receive command frames Response frame.

For data transfer between compound stations/peers, use the data link control function shown in Figure C. Each combination station /the data source in the peer controls the data sink in the other combining station/peer by means of a select command. Information flows from the data source to the data sink, Confirmation is always sent in the opposite direction. Each combination station/peer can make use of the inquiry order request from another combination station/peer Station confirmation and status response.

Figure C balances data link functions

Data link configuration the categories of advanced data link control (HDLC) procedures are some of the ways to describe data link operations. These methods allow for various logics Synchronous or start/stop, transparent data transmission between data stations of a configuration and physical configuration. These categories of procedures are throughout HDLC architecture, defined in a consistent manner. One of the purposes of this standard is unbalanced procedures, balanced procedures and no connection procedures Maintaining maximum compatibility between the basic categories is particularly needed for data stations with configurable capabilities that operate on a specific communication basis the example requirements may have the characteristics of a master station, a secondary station, a compound station, a control station, a secondary station or a peer station.

This standard defines five basic types of procedures (two unbalanced, one balanced and two unconnected), unbalanced categories apply Point-to-point and multi-point configurations on private or switched data transmission facilities (see Figure D, using