



Generic HDLC Interface

bintec Dm774-I

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I Related Documents

bintec Dm732-I Dial Profiles

bintec Dm772-I Common Configuration Interfaces

Chapter 1 Introduction

1.1 Introducing the HDLC interface

The router's generic HDLC interface provides a standard HDLC encapsulation mechanism that encapsulates data over synchronous bit-oriented serial lines using framing characters and checksums.

An HDLC frame is made up of an address field, a control and fixed-length protocol, and a variable-length field that contains the user data. The following figure displays the frame format.

Octet	8	7	6	5	4	3	2	1
1	HDLC Flag = 0x7e							
2	Address (1 octet)							
2	Control (1 octet)							
3-4	Protocol (2 octets)							
User data								
	Frame check sequence (FCS) = 16 bits (2 octets)							
N	HDLC Flag = 0x7E							

Fig. 1: HDLC frame format

1.1.1 HDLC flags

These are the first and last octets and indicate the beginning and end of the frame.

1.1.2 Address

- Specifies the type of packet:
- 0x8F: Multicast: Maintenance packet.
 - 0x0F: Unicast: Data packet.

1.1.3 Control

Always set to 0.

1.1.4 Protocol

Specifies the type of data contained in the information field. Normally this is an Ethernet protocol and has the following values:

- 0x0800 IP.
- 0x0806 ARP.
- 0x86DD IPv6.

1.1.5 User data

This field contains the protocol packet to be transmitted.

1.1.6 Frame check sequence (FCS)

This field is a standard 16-bit CRC (*Cyclic Redundancy Check*) normally used in HDLC and LAPD frames. Its task is to detect errors in the frame bits that are between the beginning flag and the frame check sequence (FCS).

Chapter 2 Configuration

2.1 Configuration Commands

This chapter describes the Generic HDLC interface configuration commands and is divided into the following sections:

- Aggregating an HDLC interface.
- Displaying the HDLC configuration prompt.
- HDLC configuration commands.

2.2 Aggregating an HDLC interface

Adds a generic HDLC interface as follows:

- Run **add device hdlc <interface_id>** (at the main configuration menu).

```
*config

Config>add device hdlc X
Config>list devices
Interface          Connector    Type of interface
ethernet0/0        LAN1        Fast Ethernet interface
serial0/0          SERIAL0/WAN1 Auto Install Interface
serial0/1          SERIAL1/WAN2 X25
serial0/2          SERIAL2/WAN3 X25
bri0/0            BRI/ISDN1   ISDN Basic Rate Int
x25-node           ---        Router->Node
hdlcx             ---        Generic HDLC encapsulation
Config>
```

- Associate a base interface with the HDLC. If you want the HDLC interface to establish over a serial line, preconfigure the serial line for the device you wish to use as a synchronous interface (SYNC):

```
Config>set data-link sync serialX/X

Config>network hdlcX
-- Generic HDLC Encapsulation User Configuration --
hdlcX config>base-interface
-- Base Interface Configuration --
hdlcX Base IFC config>base-interface serialX/X link
hdlcX Base IFC config>
```

Another possibility is to configure HDLC over ISDN BRI:

```
Config>network hdlcX

-- Generic HDLC Encapsulation User Configuration --
hdlcX config>base-interface
-- Base Interface Configuration --
hdlcX Base IFC config>base-interface briX/X <circuit_id> {link | profile <profile_name>}
hdlcX Base IFC config>
```

You can also configure HDLC over channels (time-slots) or groups of G.703 interface channels.

```
Config>network hdlcX

-- Generic HDLC Encapsulation User Configuration --
hdlcX config>base-interface
-- Base Interface Configuration --
hdlcX Base IFC config>base-interface g703X/X <circuit_id> link
hdlcX Base IFC config>
```

- If the interface is HDLC over ISDN BRI and the ISDN channels are switched (i.e., the link is established through calls), you also need to create a call profile to control the connection. The call profile contains data such as what type of calls are permitted, where the outgoing calls go to, what incoming calls are permitted, what the idle time is,

etc. For further information on call profiles, please see bintec manual *Dm732-I Dial Profiles*.

2.3 Displaying the HDLC configuration prompt

To access the HDLC configuration environment, carry out the following steps:

- (1) At the GESTCON (*) prompt, enter **Process 4** (or **P4**), or **Config**.
- (2) At the configuration prompt (Config>), enter **network <interface_name>**, where the **interface_name** is the name of the interface where HDLC is going to run.
- (3) To configure the specific HDLC parameters, simply use one of the commands described in this chapter (HDLC configuration menu). To access this menu once within the interface configuration, run **hdlc** to enter the menu corresponding to these specified parameters.

```
*config

Config>network hdlcX
-- Generic HDLC Encapsulation User Configuration --
hdlcX config>?
  base-interface      Access the base interface configuration menu
  bfd                 Interface Bidirectional Forwarding Detection config commands
  description         Enter interface description
  hdlc                Takes you to the hdlc encapsulation configuration prompt
  ip                  Interface Internet Protocol config commands
  ipv6                Interface Internet Protocol version 6 config commands
  load-interval       Specify interval for load calculation for an interface
  mtu                 Set the interface maximum transmit unit
  no                  Negates a command or sets its defaults
  service-policy      Configure QoS Service Policy
  shutdown            Change state to administratively down
  update              Update a level indicator
  exit
hdlcX config>hdlc

-- HDLC encapsulator user configuration --
hdlcX HDLC config>
```

Command history:

Release	Modification
11.0.1.1.2	
11.0.3	IPv6 option added. The IPv6 protocol is already supported on HDLC interfaces.

There are certain commands common to all device interfaces. These commands are described in bintec manual *Dm772-I common Configuration Interfaces*.

2.4 Configuring HDLC

This section describes the HDLC interface configuration commands.

Command	Function
? (HELP)	Lists the available commands or options within a command.
KEEPALIVE	Configures the maintenance timer value.
LIST	Lists the options configuration for the interface.
NO	Configures the default value for a particular option.
EXIT	Returns to the <i>hdlcx config></i> configuration prompt.

2.4.1 ? (HELP)

You can use the **? (HELP)** command to list all the valid commands at the level where the router is configured. This command can also be used after a specific command to list its options.

Syntax:

```
hdlcX HDLC config>?
```


Example:

```
hdlcX HDLC config>?
  keepalive    Sets the keepalive timer value
  list         Display Interface Configuration
  no
  exit
hdlcX HDLC config>
```

2.4.2 KEEPALIVE

Configures the time interval where the maintenance frames from the interface are transmitted and evaluated. (*10 # Default value*).

To disable the Keepalive, run the **no** command described in this manual.

So the HDLC interface operates correctly, the Keepalive value must be identical at both ends. There is no value negotiation in the configuration consequently it is essential that both values are the same.

If three keepalives are transmitted and a response is not received from the other end, the interface is declared DOWN.

Syntax:

```
hdlcX HDLC config>keepalive ?
<1..65535>    Sets the keepalive timer value
```

Example:

```
hdlcX HDLC config> keepalive 15
hdlcX HDLC config>
```

2.4.3 LIST

Displays the current configuration of the interface's configurable parameters.

Example:

```
hdlcX HDLC config>list
Keepalive timer value .... 10
MTU size ..... 2048
hdlcX HDLC config>
```

2.4.4 NO

Disables the keepalive timer.

Example:

```
hdlcX HDLC config>no ?
  keepalive    Disables the keepalive timer
hdlcX HDLC config>no keepalive
hdlcX HDLC config>list
Keepalive timer value .... 0
MTU size ..... 2048
hdlcX HDLC config>
```

2.4.5 EXIT

Run **exit** to leave the HDLC interface configuration menu and return to the main configuration menu for the HDLC interface *config>*.

Syntax:

```
hdlcX HDLC config>exit
```

Example:

```
hdlcX HDLC config>exit
hdlcX config>
```

Chapter 3 Monitoring

3.1 Monitoring the Interface

Strictly speaking, this interface does not have monitoring commands.

To view the summarized information on the status of the HDLC interface, run **device** (monitoring prompt (+)) and then indicate the HDLC interface number.

Example:

```
+device

Interface          CSR    Vect    Auto-test    Auto-test    Maintenance
                valids    failures    failures
ethernet0/0        FA200E00    27         1           0           0
serial0/0           FA200A00    5e         0           80          0
serial0/1           FA200A20    5d         0          239          0
serial0/2           FA200A60    5b         0          239          0
bri0/0             FA200A40    5c         0           0           0
x25-node            0          0          1           0           0
hdlc1              0          0          0           8           0
+
+device hdlc1

Interface          CSR    Vect    Auto-test    Auto-test    Maintenance
                valids    failures    failures
hdlc1              0          0          0           9           0

base interface is serial0/0
base interface state is down
protocol state is down
keepalive is 10
  myseq:    0
  mineseen: 0
  yourseen: 0
+
```

The meaning of each of the fields is as follows:

Interface	Type of interface and index.
CSR	Address for the control/status/data registers.
Vect	Interruption vector associated to the interface.
Auto-test valids	Number of successful Auto-tests. This does not update for BRI ISDN interfaces.
Auto-test failures	Number of failed Auto-tests. This does not update for BRI ISDN interfaces.
Maintenance failures	Number of maintenance failures. This does not update for BRI ISDN interfaces.
Keepalive	Maintenance timer value.
myseq	Maintenance sequence number to be sent.
mineseen	Maintenance sequence number expected at the remote end.
yourseen	Maintenance sequence number received from the remote end.