

ISDN modules of H3C Series Routers

I. Preface

ISDN (Integrated Services Digital Network) is a new technology developed since 1970s. It provides full terminal user-to-terminal user digital services and enables full digital transmission of comprehensive services, such as voice, data, graph and video.

Unlike traditional PSTN network that user information is transmitted to switch through analog user loop and then translated into digital signal through A/D. After traveling through digital exchange and transport network, it is recovered the original analog signal at the destination. ISDN solves the problem of digital transport of user loop, enables end-to-end digitalization and supports the transmission of digital and analog information through this standardized digital interface. Additionally, with standardization, ITU-T defines ISDN services specification, making it possible for comprehensive services. It also defines recommendations like I.430, Q.921 and Q.931. All devices complying with the corresponding ISDN standards of ITU-T can access the ISDN network smoothly.

II. Introduction to Modules

Module type

ISDN module includes: 4BS, 2S1B, SIC-1BS/SIC-2BS and SIC-1BU/SIC-2BU.

2S1B module function overview

SIC-1BS/SIC-2BS is the short of 1/2-port ISDN BRI S/T link process unit, which is primarily designed to fulfill the receiving/sending and process of 1/2-way ISDN BRI S/T data flow; SIC-1BU/SIC-2BU is the short of 1/2-port ISDN BRI U link process unit, which is primarily designed to fulfill the receiving/sending and process of 1/2-way ISDN BRI U data flow.

SIC-1BS/SIC-2BS and SIC-1BU/SIC-2BU have two operation modes: dial-in and leased line.

4BS module function overview

4BS is the short of 4-port ISDN BRI link process unit, where BS represents ISDN BRI S/T interface. 4BS module is primarily designed to fulfill the receiving/sending and process of 4-way ISDN BRI S/T data flow.

4BS have two operation modes: dial-in and leased line.

III. Module Appearance

4BS module appearance is shown as follows:

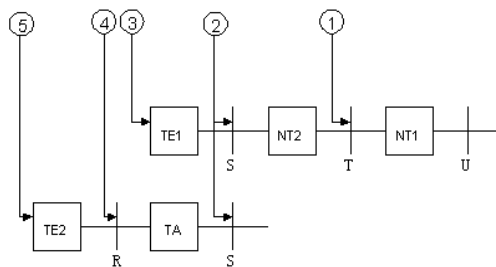


Figure 1 4BS module appearance

Module appearance

The appearance of SIC-1BS/SIC-2BS and SIC-1BU/SIC-2BU is shown as follows:

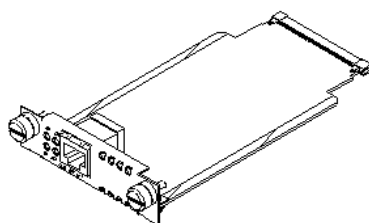


Figure 2 SIC-1BS/SIC-1BU appearance

SIC-1BU appearance

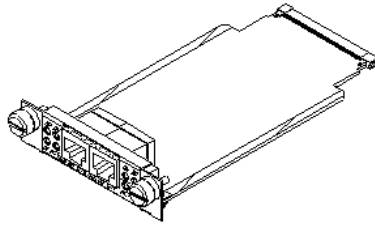


Figure 3 SIC-2BS/SI

C-2BU appearance

#### IV. Module Interface Cable

The interface cable of 4BS module is standards-based ISDN S/T port cable. NO.3 pin and NO.6 pin are sender; NO. 4 pin and NO. 5 pin are receiver. Both ends of the cable are RJ-45 connector.

SIC-1BS/SIC-2BS uses 4-core twisted pair S/T port cable. Both ends of the cable are RJ-45 connector. NO.3 pin and NO.6 pin are sender; NO. 4 pin and NO. 5 pin are receiver.

SIC-1BU/SIC-2BU uses 2-core twisted pair U port cable. Both ends of the cable are RJ-11 connector.

#### V. Module Interface Attribute

Table 1 4BS interface attribute

Attribute	Description
Type of connector	RJ-45
Connector number	4
Type of cable	ISDN S/T port cable
Protocol standard	Comply with ITU-T I.430, Q.921 and Q.931 standard
Operation mode	ISDN dial-in ISDN leased line
Service	ISDN ISDN supplementary services Multiuser number Sub address Back up
Protocol	PPP over ISDN MP Q.921 Q.931

Table 2 SIC-1BS/SIC-2BS

和 SIC-1BU/SIC-2BU interface

Attribute	Description
Type of connector	RJ-45 (SIC-1BS/SIC-2BS) RJ-45 (SIC-1BU/SIC-2BU, comply with RJ-11)
Connector number	1 (SIC-1BS/ SIC-1BU) 2 (SIC-2BS/ SIC-2SU)
Type of cable	ISDN S/T port cable (SIC-1BS/SIC-2BS) ISDN U port cable (SIC-1BU/SIC-2BU)
Protocol standard	Comply with ITU-T I.430, Q.921, Q.931 standards.
Operation mode	ISDN dial-in ISDN leased line
Service	ISDN ISDN supplementary services Multiuser number Sub address Back up
Protocol	PPP over ISDN MP Q.921 Q.931

#### VI. Network Description

ISDN user-network interface specification:

In ITU-T I.411 recommendation, we bring forward the reference configuration of ISDN user-network interface depending on function group (a group of functions necessary for accessing ISDN) and reference metrics (used to differentiate function groups) concepts, as shown in the following figure.

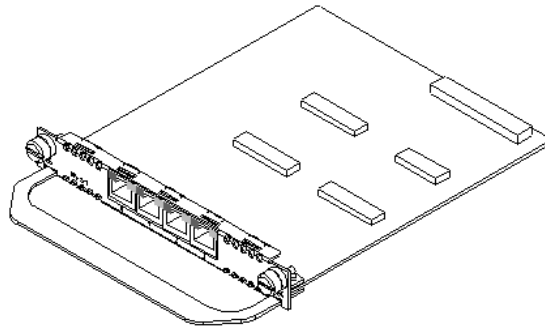


Figure 4 ISDN user-network interface

reference configuration

Function group is broken into:

Network terminal 1 (NT1): primarily fulfill OSI Layer 1 functions, including user line transmission, loop test and D channel competence.

Network terminal 2 (NT2): also called as intelligent network terminal, includes OSI Layer1 to Layer 3.

1 type terminal equipment (TE1): called as ISDN standard terminal, is ISDN interface standard-compliant user equipments (for example, digital telephone).

2 type terminal equipment (TE2): called as non-ISDN standard terminal, is user equipments not comply with ISDN interface standard.

Terminal adapter (TA): fulfills adaptation function, allowing TE2 to access ISDN standard interface.

Reference metrics includes:

R reference metrics: between non ISDN device and TA

S reference metrics: between user terminal and NT2

T reference metrics: between NT1 and NT2

U reference metrics: between NT1 device and line terminal device

Pre-preparation:

The carrier provides either ISDN BRI U interface or ISDN BRI S/T interface: in ITU-T I.411 recommendation, we bring forward ISDN user-network interface reference model. But for the place of separation point between user and network, no an agreement had been made worldwide. Thus countries employ U interface or S/T interface specification respectively as required. So user should know the interface provided by telecom service provider is ISDN BRI U interface or ISDN BRI S/T interface before purchasing routers.

Whether digital service is available: ISDN provides comprehensive services, such as digital service or voice service. Due to router needs digital communication, the applied ISDN line must provide digital calling service, or it cannot implement the application of data communication.

Whether Point-To-Point connection or Point-To-Multipoint connection (optional): ISDN supports semi-permanent connection function. When user only uses ISDN as the connection of two fixed points, he can use ISDN leased line. Or he needs to employ Point-To-Multipoint connection.

Calling ID calling line identification (optional): it is optional. It can fulfill the function of filtering calling numbers on the ISDN with Calling ID function. Thus only some user lines can access the router to enhance network security.