AT&T

SLC ® Series 5 Carrier System

AUA200 Datapath* Extension DPX Channel Unit — 5SCTBOO

Features/Functions

- Switched 56 kb/s Data Operation over a single pair of wires

- Extends Northern Telecom *Datapath* services from a DMS-100 and DMS-10 Central office switch

- Supports network connectivity to non-*Datapath* 4-wire switched 56 Kb/s services

- Integrated DMS switch maintenance control

- Supports DDS alternating and latching loopbacks

Description

The AUA200 DPX Channel unit [COMCODE 107050437] is primarily used in a 2-wire end-link of a switched 56kb/s digital data service. An end-link is the part of the service between a customer and the local central office. The AUA200 DPX is always located in the remote terminal (RT). The AUA200 DPX is end-to-end compatible with the AUA34() DS0 DP located at the *SLC* Series 5 COT or D4 DS0 DP in a *SLC*-96 COT or D4 channel bank.

The AUA200 (DPX) channel unit is a *SLC* Series 5 line card that provides an extension of the Northern Telecom *Datapath* switched 56 kb/s PSDN service offering. The loop interface and data protocols are compatible with the

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* Datapath is a registered trademark of Northern Telecom.

"*Datapath* Network Access Interface Specifications" as described in Bellcore TR-EOP-000277.

The AUA200 DPX is network compatible with either the Northern Telecom *Datapath* service or 4- wire switched 56kb/s data services such as the AT&T ACCUNET switched 56 service. The carrier line side DS0 interface is similar to the 56 kb/s DDS format with the exception that the 8th bit (Data/Control) is now used for call supervision. The unit provides a single channel of service for the *SLC* Series 5 System. The AUA200 provides the interface between the customer's *Datapath* Data Unit (DU) and the *SLC* Series 5 DS0 digital bit stream.

The AUA200 DPX communicates with the customer located DU via a 2-wire non-loaded loop interface. The transmission across the interface is in a TCM format at a 160kb/s rate. The pulse modulation scheme is AMI, 50% duty cycle, bipolar, return to zero. The TCM transmission format is half duplex ping-pong transmission. The effective rate of this format (including delay and guard banding) is 72kb/s full duplex (8kHz signal channel and 64kHz data channel).

The average transmit power into a 135 Ohm load is less than or equal to +10dBM.

The AUA200 DPX is capable of operating with line attenuations not greater than 42dB or with loops with a one way delay path of up to 31.25 microseconds. The cable gauge of the loop will determine which factor limits the loop length. The sum of all bridge taps must be less than 2.5kFt. Recommended maximum loop lengths are listed in Table 1.

⇒ **NOTE:**

Custom calling options are limited to those provided by the CPE.

Table 1. Maximum Loop Length

Cable Gauge	Maximum Length	Limitation
26	13.1KFt	42dB loss
24	17.5kFt	31.25uSec delay
22	18.5kFt	31.25uSec delay

All options for the AUA200 are selected by switches on the unit. These options are listed in Table 2.

⇒ **NOTE:**

There is no CIU access to the AUA200.

Table 2. AUA200 Options and Features

OPTION	FEATURE
DTMF/DP	DIALING MODE; ON = Dial Pulse OFF = DTMF
WINK	WINK START ENABLE
AUTO TRK	AUTO TRUNK CONFIGURATION
MCD	MINIMUM CALL DELAY
NDUTST	NEAR END DU TEST ENABLE
PSDS EN	PSDS ENABLE
H/S SIG	SIGNALING MODE; ON = SOFTWARE SIGNALING OFF = HARDWARE SIGNALING

■ Dialing Mode - This option selects the dialing method used by the AUA200 during call origination. If this switch is off then the card will use DTMF (tone) dialing towards the switch. If on, then the card will use pulse dialing.

■ Wink Start Signaling - This feature controls the handling of incoming calls. With the wink start option enabled, the DPX CU sends a wink indication back to the switch when it detects signaling asserted from the switch. If wink start is disabled, then the DPX CU will simply begin "ringing" the DU when it detects the signaling assertion from the switch. This switch is usually set to off unless the DMS switch is optioned for wink start.

■ Auto Trunk Configuration - This switch allows the AUA200 to be placed into a circuit that has been provisioned to automatically connect to another specified circuit. This configuration is used when a DU has been provisioned for the automatic line mode, and prevents the local DU from attempting to dial a number. This mode of operation can be enabled or disabled and the local switch must be provisioned in like manner. This switch is normally off.

■ Minimum Call Delay - When enabled, this feature inserts a two second delay to prevent immediate data connection when the local DU goes off-hook in response to an incoming call. It prevents a call from being quickly completed prior to the start of billing.

■ NDUTST - (DU Testing) During self test, invoked from a faceplate switch or at power-up, the near end data unit portion of the test may be disabled. The test is described in the 4th paragraph below. This switch controlled option will prevent or allow the testing of the local DU.

■ PSDS Enable - The DPX can be used in the PSDS network when this switch is enabled. This option allows timeout control of the T-LINK handshaking sequence. If the T-LINK handshaking has not successfully completed within a specified time period, the DPX will transmit Inband-Sync-Timeout to the DU. At this time, if the DU is capable of communications compatible with the 56K PSDS network, data passage is

possible at the 56 Kb/s data rate. This option is usually enabled, allowing 56Kb/s data from all service providers.

⇛ **NOTE:**

> T-LINK is a Northern Telecom rate adaptation protocol used in the *Datapath* service to support rates less than 56 Kb/s.

■ Signaling Mode - This option determines when hardware or software methods are used to detect signaling from the Central Office switch. Most applications will use the default software signaling mode. Hardware signaling mode is only used in conjunction with a digital cross-connect system operating in the signaling mode. For all universal configurations and configurations using a *SLC*-2000 Access System Multi Services Digital Terminal (MSDT), the switch must be set to the software position S. For integrated systems not using an MSDT, the switch should be set to the hardware position H.

⇛ **NOTE:**

> DDS-type latching loopbacks are not supported when the unit is optioned for hardware signaling.

The AUA200 DPX card has a front panel test switch that can be used to initiate an on board circuit check and a check of the local DU. The ability to perform a local DU test is an option and may be disabled if desired by selecting NDUTST=off. An isolation relay (located on the DPX card) is used to short the tip and ring pair to allow for functional testing of the DPX without any constraints on the cable termination. The front panel contains two LED indicators to indicate failure of the DPX or the near end DU (including a cable fault). ALL indicators illuminate during selftest. After conclusion of the test, the BUSY indicator will extinguish. The DPX and DU FAIL indicators remain lit to indicate failure of the test.

The AUA200 will respond to the IBERT (Integrated BERT) protocol from the Northern Telecom DMS switch. This will allow for verification of the circuit up to and including the DPX card itself. The card will respond to all the current IBERT commands used for DPX service connections with one exception. The command "SEND TE PROFILE UPLOAD" is not supported.

In non-*Datapath* service applications, the AUA200 supports local DDS format testing. The unit responds to alternating and latching OCU, DSU, and CSU loopbacks. By allowing this test compatibility, fault isolation is possible by using the "KS" type test boxes present in nearly all telco offices. Both loopbacks will respond as defined in Bellcore Technical Advisory TA-TSY-000077. The OCU loopback will activate the loop shorting relay on the DPX and perform analog loopback. The CSU and DSU loopbacks require that a DU terminate the loop. These loopbacks are activated in the DU by messages in the control channel between the DPX and DU. This type of test is only valid when the unit is optioned in the software signaling mode.

The AUA200 faceplate contains a BUSY, a DU FAIL, and a DPX FAIL indicator. As previously mentioned, there are 2 failure indicators on the front panel: one for the DPX itself, and one for the DU and/or loop failure. These indicators are both illuminated and will extinguish after completion of a successful selftest. The DPX FAIL indicator will also flash if the AUA200 is configured for software signaling mode and an incorrect signaling pattern is received from the switch. During selftest, when the network is active, or in the off-hook state, the BUSY indicator will remain illuminated. The BUSY indicator will flash, indicating that the card is in a test mode, during DDS loopbacks or IBERT testing from the network.

The AUA200 unit interfaces to the DU located at the customer premises via the tip and ring metallic interface on the backplane.

The AUA200 DPX can be used in any channel unit slot of a *SLC* Series 5 Carrier RT and can be used in combination with any mix of the other *SLC* Series 5 Carrier System CUs. If required, all 48 CU slots in a bank can be equipped with AUA200 DPX. The presence of BRITE CUs (AUA90, AUA92, AUA93) imposes certain placement restrictions on other CUs. For details see AT&T 363-205-010, *SLC* Series 5 Carrier System, Application and Planning Guide.

Compatibility

The AUA200 DPX is compatible with the following feature packages:

1. All FPB offerings (Mode 1 and Mode 2)

2. All FPC offerings

3. All INA-RT Modes

4. All FP303 releases

⇛ **NOTE:**
    The AUA200 is not compatible with FPD or FPI.

The AUA200 DPX is end-to-end compatible with the AUA34 (5SCU380) or AUA34B (5SC1330) digital signal zero dataport channel unit (AT&T Data Sheet 363-005-104) in a *SLC* Series 5 COT, or D4 digital signal zero dataport channel units in a *SLC* 96 COT or D4 channel bank.

For all applications of the AUA200 DPX, the *SLC* Series 5 Carrier System must be synchronized to a DDS-type composite clock. The interface to the clock is the AUA3 office timing unit (OTU) (5SCS604), which is used in the COT. An OTU is not required in the RT since the RT is loop-timed to the COT.
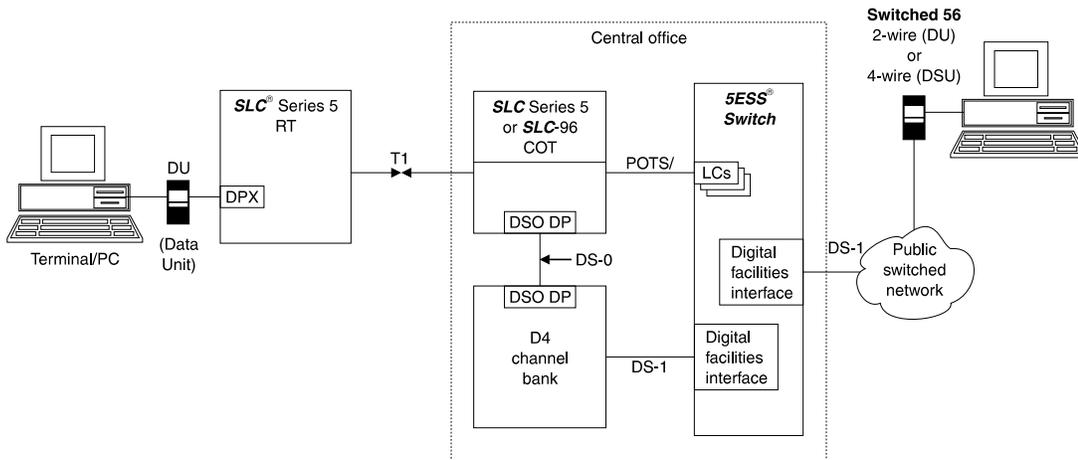
Applications

Figures 1-4 show typical switched 56 service extension applications for both universal and integrated *SLC* Carrier Systems.
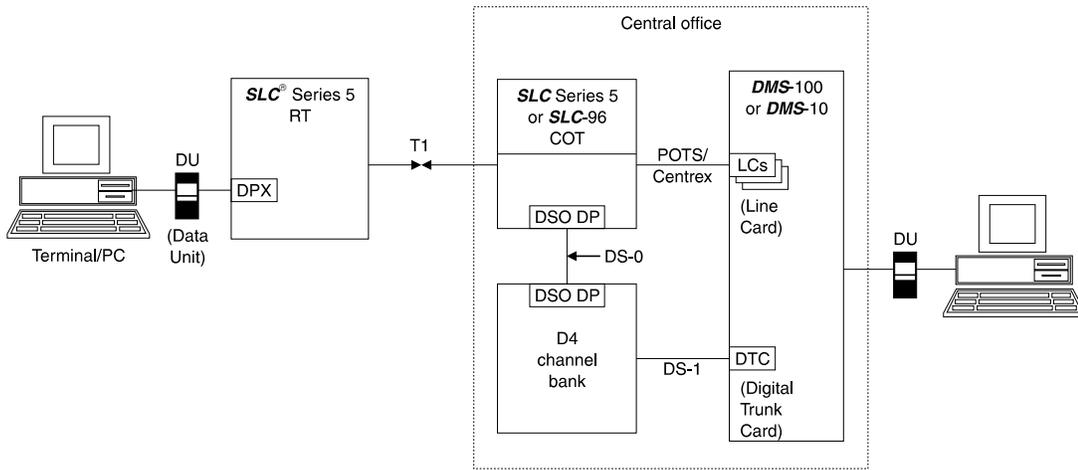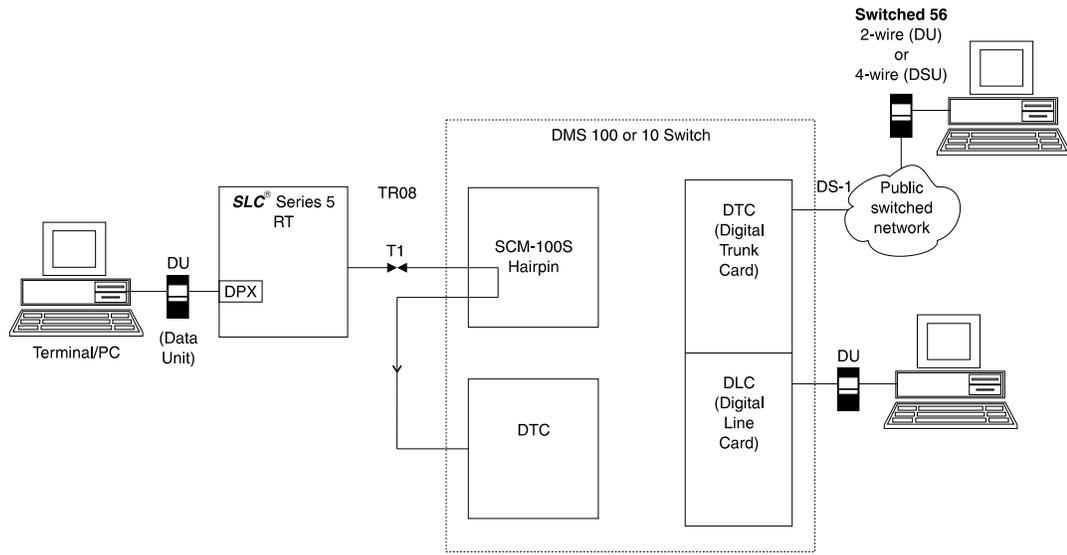
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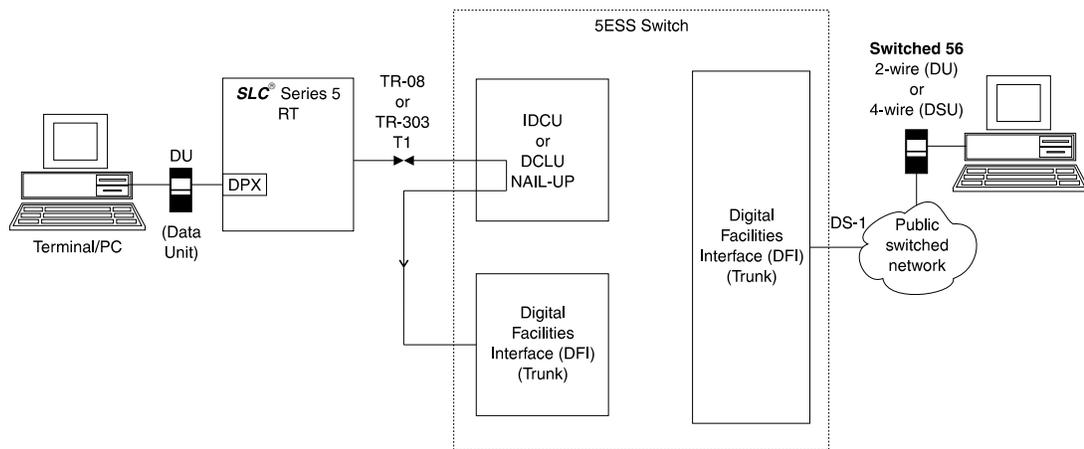**Figure 1. Local *Datapath* Access, Universal *SLC* Series 5 System**

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Figure 2. Non-*Datapath* Switched 56 Access, Universal *SLC* Series 5 System

Figure 3. *Datapath* **Access, Integrated** *SLC* **Series 5 System**

Figure 4. Non-*Datapath* **Switched 56 Access, Integrated** *SLC* **Series 5 System**

Faceplate Features and Options

Figure 5 shows the AUA200 faceplate and option switch labeling. The faceplate has 3 LEDs and one pushbutton test switch.

DPX FAIL (Red LED): When lit steadily, indicates failure of the AUA200; when flashing, indicates an incorrect signalling pattern received from the switch.

DU FAIL (Red LED): When lit, indicates the attempt to test the local Data Unit, DU, has failed.

DU TEST (Switch): Initiates self-test when pressed.

BUSY (Red LED): When lit steadily, indicates circuit busy; when flashing, indicates DDS loopback or IBERT testing in progress.
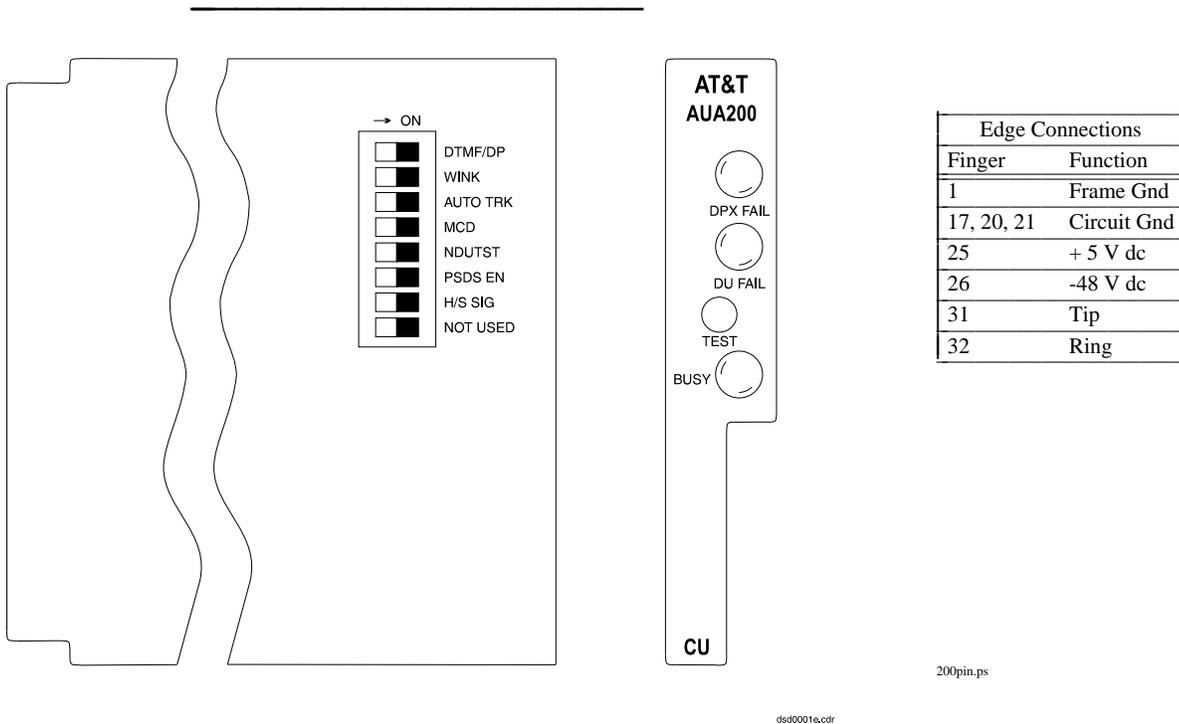

Edge Connections	
Finger	Function
1	Frame Gnd
17, 20, 21	Circuit Gnd
25	+ 5 V dc
26	-48 V dc
31	Tip
32	Ring

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Figure 5. AUA200 Faceplate, Option Switches, and Edge Connections

Technical Assistance

Follow local procedures for obtaining technical assistance. AT&T also provides in-hours or emergency out-of-hours help for the *SLC* Series 5 Carrier System. Call the AT&T Regional Technical Assistance Center at **1-800-225-RTAC**.

Ordering Information

Additional copies of this document (AT&T 363-005-313) are available from the Customer Information Center — call 1-800-432-6600.

Comments

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