SLC®-2000 Access System

*SPQ*811 DT Server
—LFI2V40

Features/Functions

- Compatible with TR-08/TR-303 basic service

- Software downloading for future upgradable features

- Enhanced ONU system alarms

- TR-303 ISDN BRI 2B+D service

- TR-08/TR-303 metallic circuit testing

- Serves 12 or 24 DS0s

- Supports TR-909 Fiber-In-The-Loop (FITL)

- B8ZS or ZCS line coding

- Enhanced inventory

- Server/ONU link performance monitoring.

- Supports voice frequency data enhancement (VFDE) operation

- Conforms to appropriate industry standards

Description

This data sheet describes the *SPQ*811 Distant Terminal (DT) Server (COMCODE 108049099, *SPQ*811 DT Server) and is intended for the end-user of the unit. The *SPQ*811 DT Server is designed to support the *SLC*-2000 distant terminals used in *SLC*-2000 Access System. The *SPQ*811 DT Server transports customer time slots and control information between the *SLC*-2000 host digital terminal (HDT) system's metallic distribution shelf (MDS) assembly backplane and the transport equipment connected to a *SLC*-2000 Multi-Services Distant Terminal (MSDT) or DDM-2000 FiberReach Narrowband Shelf (NBS) optical network unit (ONU).

The *SPQ*811 DT Server is a double-width unit. It occupies two adjacent channel unit slots in an MDS assembly shelf of the *SLC*-2000 HDT. The *SPQ*811 DT Server can be placed in any of the odd numbered slots of the MDS and can support 12 or 24 line DTs for Release R4.5 and later. The *SPQ*811 DT Server is limited to slots 1, 3, 5, 7, 13, 15, 17, and 19 for Release R4.4 and earlier.

The *SPQ*811 DT Server is always located in an HDT. It accepts either twelve or twenty-four time slots from the *SLC*-2000 system backplane. The time slots are scrambled and rate-converted to a 1.544 Mb/s signal and transmitted toward the DT. When receiving a 1.544 Mb/s signal from the DT, the *SPQ*811 DT Server converts it from a balanced input to a logic level signal and passes it to the framer circuit where clock is recovered and rate-converted from the 1.544 Mb/s bit stream. The signal is descrambled, demultiplexed, and passed to the backplane interface logic (BPIL) circuit for buffering and rearrangement in the time slot interchange (TSI)

The *SPQ*811 DT Server supports voice frequency data enhancement (VFDE) operation, Release 4.6 and later, for MSDT or DDM-2000 FiberReach Narrowband Shelf (NBS) ONU applications. The VFDE feature allows a *SLC*-2000 Access System operating as a TR-303[*] compliant remote digital terminal (RDT) to operate in a clear channel mode. A digital loop carrier system that can operate in a clear channel mode will generally produce noticeable increases in connect rates of V.34 and digital modems. The VFDE feature, a proprietary enhancement of the TR-303 protocol, is achieved in Release 4.6 and later. A VFDE compatible channel unit such as the *SPQ*401B CU or *SPQ*440D CU is required in the MSDT or NBS ONU in conjunction with the *SPQ*811 DT Server for the VFDE feature to operate.

The *SPQ*811 DT Server supports TR-08/TR-303 metallic circuit testing by presenting DC signatures on the HDT metallic test bus in response to metallic test results provided by the MSDT or NBS ONU.

The *SPQ*811 Server stores a plug-in inventory record in non-volatile memory available for reading by an inventory compatible host (e.g., *SLC*-2000 Access System). The inventory record includes 10-character *COMMON LANGUAGE*[†] *CLEI*, COMCODE, ECI, Function, and ID codes.

Figure 1 shows the faceplate diagram for the *SPQ*811 DT Server and switch layout. Table 1 lists the environmental specifications. Table 2 lists the power drain requirements. Table 3 lists the *SPQ*811 DT Server switches. Table 4 lists the equalization option settings and Table 5 lists the edge connections for the *SPQ*811 DT Server.

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[*] Bellcore Technical Reference TR-NWT-000303 Issue 2, December 1992, and all Supplements, *Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface.* TR-303 has been reissued as GR-303-CORE.

[†] *COMMON LANGUAGE* is a registered trademark and *CLEI*, *CLLI*, *CLCI*, and *CLFI* are trademarks of Bell Communications Research, Inc.

Compatibility

The *SPQ*811 DT Server supports the following *SLC*-2000 Software Releases for Fiber in the Loop (FITL) applications:

- **Release 4.4**. For this release, the *SPQ*811 DT Server supports only FITL applications hosting the DDM-2000 FiberReach Narrowband Shelf (NBS) ONU. The *SPQ*811 DT Server is limited to slots 1, 3, 5, 7, 13, 15, 17, and 19 for Release R4.4 and earlier.

- **Release 4.5 and later**. For these releases, the *SPQ*811 Server supports both the DDM-2000 FiberReach NBS and the *SLC*-2000 MSDT ONUs. It is backward compatible with and supersedes the *SPQ*808, *SPQ*809 and *SPQ*810 MSDT Servers. The *SPQ*811 DT Server can be placed in any of the odd numbered slots of the MDS in Release R4.5 and later. When the *SPQ*811 DT Server hosts the MSDT, the MSDT must contain the following circuit packs to take advantage of all its features listed on page 1:

    — MC97793A1 BIU

    — AUA411B CDTU.

- **Release 4.6 and later**. The *SPQ*811 Server, when used with these Releases, supports the voice frequency data enhancement (VFDE) feature. The VFDE feature allows a *SLC*-2000 Access System operating in TR-303 mode in a MSDT/NBS configuration to operate in a clear channel mode. A digital loop carrier system that can operate in a clear channel mode will generally produce noticeable increases in the connect rates of V.34 and digital modems.

    When the *SPQ*811 Server is used with either a Multi-Services Distant Terminal or FiberReach Narrowband Shelf (NBS) ONU, use of a VFDE compatible channel unit such as the *SPQ*401B CU or *SPQ*440D CU is necessary to realize the VFDE feature in the ONU.

    The VFDE feature of *SLC*-2000 Access Systems require that this feature also be present in the local digital switch, which is in TR-303 mode. The VFDE feature of the 5ESS-2000® local digital switch is available in Software Update (SU) package 98-0008 for the 5E11(1) Software Release and in SU package 98-0007 for 5E12(1) Software Release and in the Beginning Managed Introduction (BMI) of 5E13(1) Software Release.

Specifications

The *SPQ*811 DT Server conforms to the appropriate criteria of ANSI, Bellcore, FCC, GTE and UL standards.

For further specification information, consult 363-208-000, *SLC*-2000 Access System, Applications, Planning, and Ordering Guide.

Table 1.   Environmental Specifications

A. Temperature Range (Ambient)
1. Operating, per TR-NWT-000057: in Lucent Technologies cabinet mounted RT, outside ambient temperatures of -40° F (-40° C) with no solar load to +115° F (46° C) with maximum solar load and maximum power dissipation. Lucent Technologies cabinets are designed to assure that the components within do not exceed their rated temperatures for the above conditions.
2. Storage, per TR-NWT-000057: ambient temperatures of -40° to 140° F (-40° to 60° C).
B. Relative Humidity
1. Operating, per TR-NWT-000057. For outside ambient temperature 84° F (29° C) or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.
2. Storage, per TR-NWT-000057: ambient temperatures 84° F (29° C) or less, 10% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.

Table 2.   Power drain for SPQ811 DT Server

Supply	Maximum Value
+5 Volts dc	800 mW

Faceplate Features and Server Options

The *SPQ*811 DT Server faceplate and circuit board switch locations are shown in Figure 1. The following LEDs are located on the faceplate as follows:

■ **Fail** (Red LED): When lit, indicates that a failure has been sectionalized to the *SPQ*811 DT Server.

■ **CLF** (Yellow LED): When lit, indicates that a carrier line failure has been sectionalized to the link connecting the server and ONU. During a CLF per-channel trunk processing is performed in the upstream direction (toward the switch or central office terminal).

■ **DT** (Yellow LED): When lit, indicates an event at the ONU.

■ **CONFIG** (Yellow LED): When lit, indicates a problem with an ONU channel unit and/or a *SPQ*811 DT Server configuration.

Table 3 lists the *SPQ*811 DT Server switches.

Table 3.   *SPQ*811 DT Server Option Switches

DSX Mode Setup	
Switches	**Settings**
S200	Set to the DSX position
S202	Use B/Z switch to select coding option.
S201	Set line build out according to Table 3 equalization option settings.

The *SPQ*811 DT Server contains the following option strap and switches:

■ **MJ** (Option Strap): This strap changes the alarm severity for a subset of failures. When the strap is in the **MJ=12** position with 12 lines assigned to the *SPQ*811 Server, or in the **MJ=ANY** position, a failure causes a major alarm to be transmitted. When the strap is in the **MJ=12** position with less than 12 lines assigned to the *SPQ*811 DT Server, a failure causes a minor alarm to be transmitted

■ **OU/DSX** option: Switch S200 is used to select either the optical unit (OU) or the DSX mode of operation. This switch can be used in one of the following positions depending on the *SLC*-2000 HDT Software Release:

— *Release 4.4*. With this software release, you should place the switch in **DSX** position only. Do not place the switch in the **OU** position.

— *Release 4.5 and Later*. With these software releases, you can place this switch in the OU position when hosting an MSDT using a fiber optic based applications requiring a balanced EIA-422 interface

to the external OU in the HDOS assembly. Place the switch in the DSX position when hosting an MSDT with T1 carrier applications or when hosting a DDM-2000 FiberReach NBS (with either an OC-1 facility or a T1 facility).

■   **B8ZS/ZCS** option: Switch S202 (B/Z) selects between per-channel zero code suppression (position Z) or the bipolar with 8 zero substitution (position B) line code. This switch is used to set the line code used for both the DSX and OU modes of operation. This switch is functional only in the DSX position. When the *SPQ*811 DT Server is in the OU mode, logic circuitry disables this switch.

■   **EQUALIZATION** option: Switch S201 (TRANS- 0, 1, 2) is used to select the amount of pre-equalization based on the distance between the bank and the DSX-1 cross-connect. This switch is used to compensate for various cable lengths to the DSX cross-connect when the *SPQ*811 DT Server CU is used in the DSX mode. When the *SPQ*811 DT Server CU is in the OU mode, logic circuitry disables this switch. Refer to Table 4 for equalization option settings.

Table 4.   *SPQ*811 DT Server (DSX MODE) — Equalization Option Settings

EQUALIZATION OPTION (S201) SETTINGS			
TRANS-			DISTANCE TO DSX-1[*]
2	1	0	FEET
OFF	OFF	ON	0 to 132
OFF	ON	OFF	133 to 265
OFF	ON	ON	266 to 398
ON	OFF	OFF	399 to 532
ON	OFF	ON	533 to 655

*   These distances are for ABAM cable used in the central office. Refer to 915-710-115 for calculation for other types of cable used for collocated RT and T1 extension applications.

SLC-**2000 MSDT**

The *SPQ*811 DT server can host the *SLC*-2000 MSDT using one of the following two methods:

— ***T1 Metallic Facility***. Using this configuration, the DT Server hosts the MSDT over a T1 metallic facility. The DSX-1 signal from the DT Server usually connects through a manual cross-connect to an external T1 office repeater that interfaces with the T1 facility.

⚠ **CAUTION:**
Under no circumstances should the signal lines be run to outside plant cables or equipment when the SPQ811 Server is optioned for the DSX mode. The DSX mode of operation is intended for inside plant applications only.

— ***Optical Facility Through the HDOS Assembly***: Using this configuration, the DT Server transmits the 1.544 Mb/s bit stream to an optical unit (OU) in the HDOS assembly using a balanced EIA-422 interface. The OU then sends a 1.544 Mb/s optical signal to the MSDT.
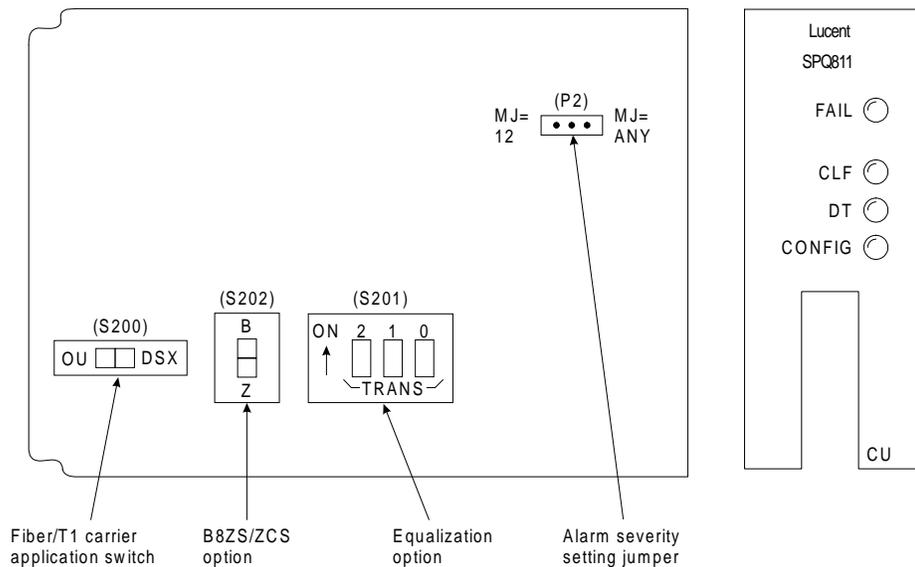
Figure 1.   *SPQ*811 DT Server Faceplate Diagram and Switch Layout

Table 5.   Edge Connections For *SPQ*811 DT Server

Finger	Function
1	Frame Ground
13, 17, 19, 20, 21	Circuit Ground
22, 23, 25, 50	+5 Volts dc
29	T1 (receive)
30	R1 (receive)
31	T (transmit)
32	R (transmit)

References

The following documents provide additional information about the use of this channel unit in the *SLC*-2000 Access System:

363-205-004	*SLC-2000 Access System, Multi-Services Distant Terminal Feature, User/Service and Ordering Manual*
363-206-300	*DDM-2000 FiberReach Multiplexer — Applications, Planning, and Ordering Guide*
363-208-000	*SLC*-2000 *Access System Application, Planning, and Ordering Guide*
363-208-001	*SLC*-2000 *Access System User/Service Manual*
363-208-003	*SLC*-2000 *Access System Command and Message Manual*

Technical Assistance

Follow local procedures for obtaining technical assistance. Lucent Technologies also provides in-hours or emergency out-of-hours help for the *SLC* Series 5 Carrier System and the *SLC*-2000 Access System. Call the Lucent Technologies Regional Technical Assistance Center at 1-800-225-RTAC.

Ordering Information

Additional copies of this document (363-005-390) are available from the Customer Information Center — call 1-888-582-3688.

Comments

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