SLC®-2000 Access System

XSPQ®456 (RT) Quad DPT Channel Unit —

Features/Functions

- Meets appropriate industry standards for DID service
- Compatible with locally-switched loop reverse battery signaling requirements in TR-NWT-000057
- No option switches
- Enhanced inventory readout
- Faceplate BUSY LED for each channel
- Faceplate test access to tip and ring for each channel
- Software provisionable for 0 dB or 2.5 dB of loss
- UL* Recognized

* Registered trademark of Underwriters Laboratories Inc.

Description

This data sheet describes the X*SPQ*456 remote terminal (RT) quad direct-inward-dial (DID) channel unit (CU) (COMCODE 108550542) and is intended for the end-user of the unit. The X*SPQ*456 CU is a current sink (CS) unit that provides the dial pulse terminate (DPT) interface between a *SLC*-2000 Access System and the DID trunk circuit of a private branch exchange (PBX).

The X*SPQ*456 channel unit provides up to four channels of service and can be installed in a remote terminal (RT) or in a multi-services distant terminal (MSDT) homed on that RT, operating in Release 4.2 or later or in a NarrowBand Shelf homed on that RT, operating in Release 4.4 or later. The unit can be used for

locally-switched or non-locally switched DID applications, depending on the configuration at the central office (CO) end of the *SLC*-2000 system. The central office end of the channel may be terminated by an *SPQ*336 CU or other dial pulse originate (DPO) channel unit in a central office terminal (COT) or by a local digital switch (LDS), for locally switched service, or may be cross-connected there to a distant CO to provide non-locally switched service (NLSS). NLSS connections can include a nailed-up or hairpin connection at a *5ESS*® LDS, a connection through a digital access cross-connect system (DACS), as well as a back-to-back connection between a COT DPO CU and an interoffice carrier system.

The X*SPQ*456 DPT channel unit detects loop reverse battery signaling from the PBX and transmits this information digitally toward the CO. Similarly, the X*SPQ*456 receives digitally encoded loop closure information from the CO end and applies this signaling toward the PBX.

Each channel of the X*SPQ*456 channel unit is independently provisioned for bi-directional loss of either 0 dB or 2.5 dB. The selection is made using a *SLC*-2000 Access System command -- there are no physical switches. This feature allows the loss level to be optimized for ranges of metallic extensions across the carrier serving area (CSA). If a digital loop carrier (DLC) is replacing long metallic loops, this control feature minimizes the loss contrast experienced upon cutover.

The X*SPQ*456 CU stores in non-volatile memory a complete plug-in inventory record including its 10-character *COMMON LANGUAGE** *CLEI* code. This CLEI code is the same as the CLEI code used in the *SPQ*456 CU. The first seven digits of the CLEI Code, SACPDC0 are used for provisioning the CU, when using the craft Interface terminal.

NOTE:
The X*SPQ*456 CU includes the following features:

- Each channel of the X*SPQ*456 can be attenuated by 2.5 dB in each direction of transmission.
- When X*SPQ*456 CU is receiving the switch idle signal (ABCD=0000), the CU continues to detect and transmit the battery polarity of the PBX interface.
- When X*SPQ*456 CU detects a disconnect from the PBX, the unit sends the reverse battery signal (1111) toward the switch to facilitate trouble recognition by CO staff.

* *COMMON LANGUAGE* is a registered trademark and *CLEI*, *CLLI*, *CLCI*, and *CLFI* are trademarks of Telcordia Technologies, Inc.

Figure 1 shows the faceplate diagram and edge connection functions for the unit. Table 1 lists the electrical and transmission specifications for the *SPQ*336/ X*SPQ*456 pair. Table 2 lists the environmental specifications, and Table 3 lists the edge connections for the X*SPQ*456 Quad DPT CU.

Facility Failure

When the bank controller notifies the channel unit that a facility failure has occurred, the X*SPQ*456 CU responds by removing loop closure immediately.

Test Access

Local test access to the X*SPQ*456 CU is available through the faceplate test jack.

Compatibility

The X*SPQ*456 channel unit is end-to-end compatible, in a Release 4.2 (or later) *SLC*-2000 RT or MSDT, with the following central office units. The universal configurations can be operated in the TR-08 or integrated network access (INA) mode.

- *SPQ*336 DPO channel unit
- *SPQ*443 E *SPOTS*® channel unit, DPO function code
- AUA36( ) DPO channel unit
- AUA43( ) E *SPOTS* channel unit, DPO function code
- *SLC* 96 WP42 DPO channel unit
- *5ESS*®switch integrated digital carrier unit (IDCU)

When the RT is served by an integrated switch or the RT is operating in the INA mode, the X*SPQ*456 CU is also end-to-end compatible with D4-type channel units of DPO functionality (such as, J98726BA).

Specifications

Table 1 gives the electrical and transmission specifications for an *SPQ*336/X*SPQ*456 channel unit pair.

Table 1. *SPQ*336/X*SPQ*456 Electrical and Transmission Specifications

Parameter	Condition	Value
1 kHz VF loss* off-hook (± 0.5 dB typical, ± 1.0 dB max)		0 dB, 2.5 dB
Frequency response (loss relative to 1004 Hz)	Frequency range 60 Hz 400-2800 Hz	 >21 dB -0.5 dB to +0.75 dB
Gain Tracking† (loss relative to 0 dBm0)	-37 dBm0 to +3 dBm0 -50 dBm0 to -37 dBm0	± 0.5 dB max. (± 0.25 dB avg.) ± 1.0 dB max. (± 0.5 dB avg.)
Idle channel noise (at the COT and RT)		≤ 20 dBrnc
Structural impedance, (hybrid impedance, output impedance)		600 ohms + 2.16 µF
Impulse noise	Measure at 47 dBrnC0 for 15 min.	≤ 15 counts
Overload at the COT and RT	+3 dBm0	≤ 0.5 dB extra loss
Signal-to-distortion	0 dBm0 to -30 dBm0 -30 dBm0 to -40 dBm0 -40 dBm0 to -45 dBm0	> 33 dB > 27 dB > 22 dB
System generated tones	0 < f < 16 kHz	< -50 dBm0
Single frequency distortion	0 - 12 kHz, 0 dBm0 1004 - 1020 kHz, 0 dBm0	< -28 dBm0‡ < -40 dBm0§
Intermodulation distortion (4-tone method, -13 dBm0 input)	A-B (R2) product 2A-B (R3) product	> 43 dB > 44 dB
Data pulse distortion peak-to-average ratio (P/AR)		> 90
Cross talk (0 dBm0 input, 200 Hz to 3400 Hz)	C-message weighting	≤ -65 dBm0

* Measured as the inserted connection loss (ICL) with the RT terminated in 600 ohms and with the COT terminated in 900 ohms.

† At 1004 Hz, off-hook

‡ At any other frequency, 0 to 12 kHz.

§ At any other frequency, 0 to 4 kHz.

This unit is intended for use in *SLC*-2000 Access Systems located in controlled environments that conform to the specifications of Telcordia Technologies GR-63*. It may also be used in applicable Lucent Technologies cabinets designed for *SLC*-2000 Access System and intended for applications in non-controlled (outside plant) environments that conform to Telcordia Technologies GR-487†. These cabinets, when properly equipped, are designed to maintain internal environmental conditions within appropriate operational limits for *SLC*-2000 Access equipment such that system performance meets TR-NWT-000057‡.

The applicable outside plant environment criteria for cabinet enclosures (per GR-487) are summarized in Table 2 Environmental Specifications.

Table 2. Environmental Specifications

A. Temperature Range (Ambient) 1. Operating, per TR-NWT-000057: in Lucent Technologies cabinets exposed to 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 ensure 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 pound 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 pound of water per pound of dry air.

* Telcordia Technologies Generic Reference GR-63, Issue 1, October 1994, and all Revisions and Supplements, "Network Equipment-Building System Requirements: Physical Protection (a module of LSSGR, GR-64; TSGR, FR-440, and NEBS FR, FR-2063)," Telcordia Technologies, Inc.

† Telcordia Technologies General Requirements GR-487, Issue 1, June 1996, and all Revisions and Supplements. "*General Requirements for Electronic Equipment Cabinets*," Telcordia Technologies, Inc.

‡ Telcordia Technologies Technical Reference TR-NWT-000057, Issue 2, January 1993, and all Revisions and Supplements, "*Functional Criteria For Digital Loop Carrier Systems*," Telcordia Technologies, Inc.

Installation and Testing

There are no switches to set on this unit. Procedures for testing the unit are given in 363-208-001 *SLC -2000 Access System User/Service Manual.*

Faceplate Features

The X*SPQ*456 quad DPT channel unit faceplate is shown in Figure 1. The faceplate jack provides convenient test access to the tip and ring through a channel unit faceplate test cord adapter part number 400395M, available from Telecom Assistance Group, Inc., West Berlin, New Jersey; (1-800-824-7005). The following LED indicators are located on the faceplate:

BUSY A (Red LED): The A channel (channel 1) is busy when lit.

BUSY B (Red LED): The B channel (channel 2) is busy when lit.

BUSY C (Red LED): The C channel (channel 3) is busy when lit.

BUSY D (Red LED): The D channel (channel 4) is busy when lit.

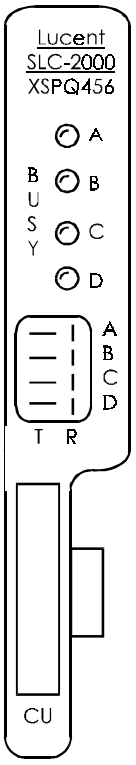

Figure 1. *XSPQ*456 CU Faceplate Diagram

Table 3. Edge Connections For X*SPQ*456 Quad DPT Channel Unit

Finger	Function
1	Frame Ground
2	Ringing Ground
3	T2 (3rd channel)
4	R2 (3rd channel)
5	T3 (4th channel)
6	R3 (4th channel)
13, 17, 19, 20, 21	Circuit Ground
22, 23, 25, 50	+5 Volts DC
26	-48 Volts DC
27	-RNG (20 Hz)
29	T1 (2nd channel)
30	R1 (2nd channel)
31	T (1st channel)
32	R (1st channel)
49	-5 Volts DC

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 *Multi-Services Distant Terminal Feature User/Service and Ordering Manual*
363-208-000	*SLC*-2000 *Access System Application, Planning, and Ordering Guide*
363-208-001	*SLC*-2000 *Access System User/Service Manual*
363-005-334	*SLC*-2000 *Access System SPQ336 (COT)* Quad DPO Channel Unit Data Sheet

Technical Assistance

Follow local procedures for obtaining technical assistance. Lucent Technologies also provides in-hours or emergency out-of-hours help for 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 (363-005-391) are available from the Customer Information Center — call 1-888-582-3688.

Comments

Comments about this document can be directed to:

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