



SLC[®]-2000 Access System

XSPQ[®]400 (RT) POTS Channel Unit—

Features/Functions

- Conforms to appropriate industry standards
- Automatic level compensation (ALC)
- Supports *CLASS*^{*} services
- Unique keying to prevent erroneous insertion in shelf
- Faceplate test access to tip and ring for four channels
- Faceplate BUSY LEDs
- On-hook transmission (OHT)
- Enhanced inventory
- No option switches

* Service mark of Bell Communications Research, Inc.

Description

This data sheet describes the XSPQ400 (RT) POTS channel unit (CU) (COMCODE 107989519) and is intended for the end-user of the unit.

The XSPQ400 channel unit is designed for 2-wire, loop-start POTS service. The unit provides four channels of service and is normally installed at the remote terminal (RT) or in a subtended optical network unit (ONU). The CU is equipped with automatic level compensation (ALC) which adds loss when connected to shorter loops. This feature optimizes the loss level for ranges of metallic extensions up to 900 ohms. If a digital loop carrier (DLC) system or channel is replacing long metallic loops, the ALC feature minimizes the loss contrast experienced on cutover. The XSPQ400 furnishes a current feed interface to the customer loop and provides a fast forward disconnect feature (repeats the central office's (CO) open battery interval toward customer premises equipment

(CPE), up to a maximum of 1.5 seconds if the central office interval is at least 50 ms). The XSPQ400 CU exhibits the same features as the SPQ400B CU except for structural impedance which is 600 ohms for the XSPQ400 CU.

The channel unit 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 apparatus code, COMCODE, Function, Loss, and ID codes.

Figure 1 shows the faceplate diagram for the XSPQ400 POTS CU. Table 1 shows the XSPQ400 CU's on-hook transmission compatibility. Table 2 lists the salient XSPQ400 CU's electrical and transmission specifications. Table 3 lists the environmental specifications and Table 4 lists the power drain of the XSPQ400 CU. Table 5 lists the edge connections for the XSPQ400 (RT) POTS CU.

Compatibility

The XSPQ400 channel unit is supported by all current and planned releases of the SLC-2000 Access System. The far-end termination can be any of the following units:

- SLC -2000 SPQ[®]300 quad POTS channel unit
- SLC -2000 SPQ[®]340 quad SPOTS channel unit, loop-start only
- AUA38() POTS channel unit
- AUA39() SPOTS channel unit, loop-start only
- 5ESS[®] switch integrated digital carrier unit (IDCU)
- 5ESS switch digital carrier line unit (DCLU)
- SLC 96 WP10() POTS channel unit
- SLC 96 WP36() SPOTS channel unit, loop-start only

Specifications

Table 1 gives the on-hook transmission capabilities for the XSPQ400 POTS CU.

Table 1. XSPQ400 POTS CU — On-hook Transmission Capability

ON-HOOK TRANSMISSION CAPABILITIES			
CO Termination	Signaling	Direction	OHT Services CND, MWI, MR
SPQ300	LS	COT↔RT	✓
WP10	LS	COT→RT	✓*
WP10B	LS	COT→RT	✓*
WP10C	LS	COT→RT	✓*
AUA38()	LS	COT↔RT	✓
WP10D	LS	COT↔RT	✓
SPQ340	LS	COT↔RT	✓
WP36	LS	COT→RT	✓*
AUA39	LS [†]	COT↔RT	✓‡
AUA39B	LS	COT↔RT	✓
INTEGRATED:§	LS	IDCU↔RT	✓
POTS CU mode	LS	DCLU↔RT	✓

Legend:

CND — Calling name/number delivery (CND). Individual calling line identification (ICLID) feature of CND transmits number, using frequency shift keying (FSK), during silent ringing interval.

MWI — Visual message waiting indication (MWI). Central office (CO) switch transmits FSK to turn on indicator during idle state.

MR — Meter reading.

LS — Loop start (LS) signaling.

* Meter must present off-hook termination when responding to poll.

† When an AUA39 CU is connected to the floating battery feed of a 5ESS Switch, either the RANGEX or GNDREF 5ESS Switch option should be set, to provide the necessary low resistance tip/ground interface when the switch sends the CND message. The RANGEX option is preferred. The AUA39B CU does not require these switch options:

RANGEX=Y [up to Release 5E9(2)] or RANGEX=EXT [Release 5E9(2) or later]

GNDREF=Y

‡ CND only.

§ Digital carrier line unit (DCLU) or integrated digital carrier unit (IDCU) interface feature of 5ESS Switch, or other switch with digital loop interface compliant with Bellcore TR-TSY-000008. (Compatibility for MWI on ground start circuits is not covered by TR8.)

Table 2 gives the salient electrical and transmission specifications for the XSPQ400 channel unit. The parameters are off-hook unless specified otherwise. For complete transmission specifications consult Chapter 4 of AT&T 363-208-000, *SLC-2000 Access System Applications, and Planning Guide*. Table 3 lists the environment specifications.

Table 2. XSPQ400 CU Electrical and Transmission Specifications *

Parameter	Value	
	<u>Normal Power</u>	<u>On Low Battery</u>
Loop Range (excluding 430 ohm telset):	0 - 1450 Ω	0 - 1200 Ω
Long Loop Current	≥ 20 mA	≥ 18 mA
Short Loop Current	28 mA	28 mA
1 kHz VF loss between CO switch fabric and network interface (NIF) at customer location, customer premises equipment (CPE) off-hook:	4 dB to 8 dB	
Nominal 1 kHz VF loss, XSPQ400 only: 0 ohm tip-to-ring 900 ohm loop resistance	4.25 dB 1.4 dB	
1 kHz VF loss between CO switch fabric and network interface (NIF) at customer location, customer premises equipment (CPE) on-hook:	4 dB to 11.5 dB	
Nominal 1 kHz VF loss, on-hook:	4.25 dB	
Two-wire return loss (reference Z of 600 ohms) (Digital switch terminated by XSPQ400 with 600 ohms AC termination.)	ERL > 18 dB, SRL > 10 dB	
Input/output impedance (Structural impedance, hybrid impedance)	600 ohms	
Minimum longitudinal balance at the RT [†]	200-1000 Hz; ≥ 58 dB 3000 Hz; ≥ 53 dB	
Idle channel noise, end-to-end	≤ 20 dBrc	
Frequency response (loss relative to 1004 Hz): End to end	<u>Frequency range</u> 300-3000 Hz; -0.5 dB to +1.0 dB 3200 Hz: -0.5 dB to +1.5 dB	
XSPQ400 only	300-3000 Hz; -0.25 dB to +0.5 dB 3200 Hz: -0.25 dB to +0.75 dB	
Rejection at 50 Hz and 60 Hz: End to end XSPQ400 only, transmit	> 26 dB > 26 dB	
Crosstalk (0 dBm0 input, 200 to 3400 Hz)	≤ -65 dBm0	

Parameter	Value
Impulse noise at a threshold of 47 dBmC0 for 15 min.	≤ 15 counts
Data pulse distortion (P/AR): End to end XSPQ400 only	> 90 ≥ 94
Single frequency distortion with input of: 0 - 12 kHz, 0 dBm0 1004 - 1020 kHz, 0 dBm0	$< - 28$ dBm0 at 0 Hz to 12 kHz $< - 40$ dBm0 at 0 Hz to 4 kHz
Signal-to-distortion with input of: 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
Gain Tracking at 1004 Hz, relative to 0 dBm0 - 37 dBm0 to + 3 dBm0 - 50 dBm0 to - 37 dBm0 - 55 dBm0 to - 50 dBm0	± 0.5 dB max. (± 0.25 dB avg.) ± 1.5 dB max. (± 0.5 dB avg.) ± 3.0 dB max. (± 1.5 dB avg.)
Intermodulation distortion (4-tone method, -13 dBm0 input)	A - B (R2) product > 43 dB 2A - B (R3) product > 44 dB

* Measured by IEEE Method 455-1976

* Note: Off hook unless specified. End-to-end performance through an integrated digital switch to a second XSPQ400 CU terminated in 600 ohms.

Table 3. Environmental Specifications

A. Temperature Range (Ambient)	
1.	Operating, per TR-NWT-000057*: in Lucent Technologies cabinet mounted RT, outside ambient temperatures of -40° F with no solar load to +115° F 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.
B. Relative Humidity	
1.	Operating, per TR-NWT-000057. For outside ambient temperature 84° F or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F, 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 or less, 10% to 95%. For ambient temperatures above 84° F, the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.

* Bellcore Technical Reference TR-NWT-000057, Issue 2, January 1993, and all Revisions and Supplements, "Functional Criteria For Digital Loop Carrier Systems," Bell Communications Research

Table 4. Power drain for XSPQ400 POTS CU

Condition	Value
All channels idle	0.29 W
Each added channel active (T/R resistance 600 ohms): XSPQ400	1.70 W*
Each added channel ringing	- 64 mW†

* 470 mW is delivered to T-R load.(600 ohms)

† XSPQ400 power drain decreases by 64 mW per channel when ringing.

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*.

The XSPQ400 CU is compatible with mechanized loop testing (MLT) and the pair gain test controller (PGTC) and the extended test controller (XTC) test systems.

Faceplate Features

The XSPQ400 quad (RT) POTS current feed channel unit faceplate is shown in Figure 2. The faceplate jack provides convenient test access to the tip and ring through a channel unit faceplate test cord, part number CiPT-5 which is available from CI Network Products; (1 708 806 6300). 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.

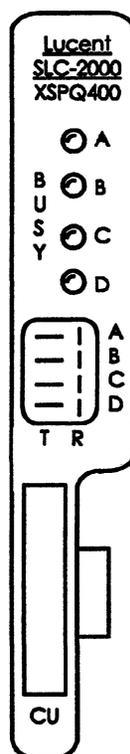


Figure 1. XSPQ400B Faceplate Diagram

Table 5. Edge Connections For XSPQ400 (RT) POTS 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)
17, 19, 20, 21.	Circuit Ground
22, 23, 25, 50	+ 5 Volts DC
26	- 48 Volts DC (RT only)
27	- RNG (25 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*:

- | | |
|-------------|---|
| 363-208-000 | <i>SLC-2000 Access System Application, Planning, and Ordering Guide</i> |
| 363-208-001 | <i>SLC-2000 Access System User/Service Manual</i> |
| 363-208-003 | <i>SLC-2000 Access System Command and Message Manual</i> |

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 (363-005-345) are available from the Customer Information Center — call 1 888 582 3688.

Comments

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