



SLC[®] -2000 Access System

SPQ[®]456 (RT) Quad DPT Channel Unit — SACPDC0

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
- Faceplate BUSY LEDs
- Faceplate test access to tip and ring for four channels
- Software provisionable for 0 dB or 2.5 dB of loss
- Enhanced inventory readout
- UL* Recognized

* Registered trademark of Underwriters Laboratories Inc.

Description

This data sheet describes the *SPQ456* remote terminal (RT) quad direct-inward-dial (DID) channel unit (CU) (COMCODE 107580417) and is intended for the end-user of the unit. The *SPQ456* 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 *SPQ456* 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. 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 *SPQ336* 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 *SPQ456* DPT channel unit detects loop reverse battery signaling from the PBX and transmits this information digitally toward the CO. Similarly, the *SPQ456* receives digitally encoded loop closure information from the CO end and applies this signaling toward the PBX.

Each channel of the *SPQ456* 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 *SPQ456* CU stores in non-volatile memory a complete plug-in inventory record including its 10-character *COMMON LANGUAGE*¹ *CLEI* code.

**NOTE:**

The *SPQ456* CU includes the following features:

- Each channel of the *SPQ456* can be attenuated by 2.5 dB in each direction of transmission.
- When *SPQ456* CU is receiving the switch idle signal (ABCD=0000), the CU continues to detect and transmit the battery polarity of the PBX interface.
- When *SPQ456* 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.

Figure 1 shows the faceplate diagram and edge connection functions for the unit. Table 1 lists the electrical and transmission specifications for the *SPQ336/SPQ456* pair. Table 2 lists the environmental specifications.

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

Facility Failure

When the bank controller notifies the channel unit that a facility failure has occurred, the *SPQ456* CU responds by removing loop closure immediately.

Test Access

Local test access to the *SPQ456* CU is available through the faceplate test jack.

Compatibility

The *SPQ456* 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.

- *SPQ336* DPO channel unit
- *SPQ443* 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 *SPQ456* 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 *SPQ336/SPQ456* channel unit pair.

Table 1. *SPQ336/SPQ456* 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.)
Return loss at COT [‡]		ERL ≥ 18 dB, SRL ≥ 12 dB
Return loss at RT [§]		ERL ≥ 19 dB, SRL ≥ 12 dB
Idle channel noise (at the COT and RT)		20 dBmC max.
Structural impedance, (hybrid impedance, output impedance)		600 ohms + 2.16 μ F
Impulse noise	Measure at 47 dBmC0 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

‡ Measured with respect to 900 ohms +2 μ F with the RT end terminated in 600 ohms +2 μ F.

§ Measured with respect to 600 ohms +2 μ F with the COT end terminated in 900 ohms +2 μ F.

¶ At any other frequency, 0 to 12 kHz.

** At any other frequency, 0 to 4 kHz.

Table 2. Environmental Specifications

<p>A. Temperature Range (Ambient)</p> <ol style="list-style-type: none">1. Operating, per TR-NWT-000057: in AT&T cabinet mounted RT, outside ambient temperatures of - 40° F with no solar load to +115° F with maximum solar load and maximum power dissipation. AT&T 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.
<p>B. Relative Humidity</p> <ol style="list-style-type: none">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.

Installation and Testing

Procedures for installation and testing the circuit between the COT and the RT are given in AT&T 363-208-001 Issue 5 *SLC-2000 Access System User/Service Manual*.

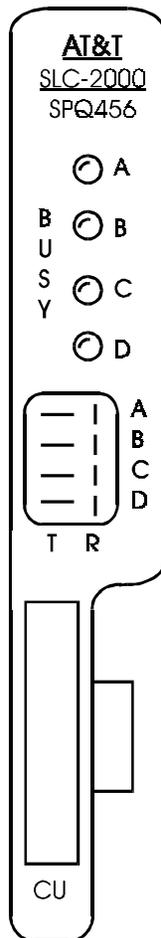
The faceplate jack provides easy test access to the tip (T) and ring (R) of all four channels (A, B, C, D) through the channel unit faceplate test cord adapter part number CiPT-5 from CI Network Products; (708-806-6300).

Faceplate Features

The *SPQ456* has one test access faceplate jack and four red LED indicators. Refer to Figure 1 for faceplate and edge connections.

The faceplate LEDs indicate as follows:

- **A BUSY** (Red LED): When lit, indicates that the A channel is busy.
- **B BUSY** (Red LED): When lit, indicates that the B channel is busy.
- **C BUSY** (Red LED): When lit, indicates that the C channel is busy.
- **D BUSY** (Red LED): When lit, indicates that the D channel is busy.



Edge Connections	
Finger	Function
1	Frame Gnd
2	Ringling Gnd
3	T 3rd channel
4	R 3rd channel
5	T 4th channel
6	R 4th channel
17, 20, 21	Circuit Gnd
22, 23, 25, 50	+5 Volts DC
26	-48 Volts DC
27	Ringling
29	T 2nd channel
30	R 2nd channel
31	T 1st channel
32	R 1st channel
49	-5 Volts DC

Figure 1. *SPQ456* Faceplate Diagram and Edge Connections

References

The following documents provide additional information about the SLC-2000 Access System:

- AT&T 363-205-004 *SLC-2000 Multi-Services Distant Terminal Feature—User/Service Manual*
- AT&T 363-208-000 *SLC-2000 Access System Application, Planning, and Ordering Guide*
- AT&T 363-208-001 *SLC-2000 Access System User/Service Manual*
- AT&T 363-005-334 *SPQ336 (COT) Quad DPO Channel Unit Data Sheet*

Technical Assistance

Follow local procedures for obtaining technical assistance. AT&T also provides in-hours or emergency out-of-hours help for the SLC-2000 Access System. Call the AT&T Regional Technical Assistance Center at 1-800-225-RTAC.

Ordering Information

Additional copies of this document (AT&T 363-005-343) are available from the Customer Information Center — call 1-800-432-6600.

Comments

Comments about this document can be directed to:

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