

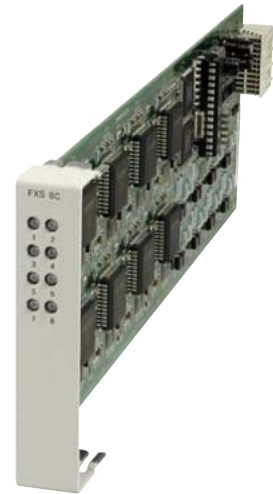
# FXS 8C 8-Channel Voice Service Card

## For use in Adit 600 Platform

Part Number: 740-0285

### Key Benefits:

- Provides up to 96 FXS voice lines long reach in a 2RU rack space
- Provides integrated GR-909 test capabilities
- Supports migration from TDM to VoIP service delivery while preserving existing capital investment
- Supports loop range, ringing and protection for end-office or customer premises
- Provides overvoltage and overcurrent protection to minimize service calls due to lightning and power cross incidents
- Minimizes power consumption for high-density service delivery with automated battery voltage switching
- Ringing voltage/cadence generation and ring trip detection
- Loop hold and programmable impedance and termination for international compliance
- Selectable  $\mu$ -Law and A-law encoding
- Configurable calling party disconnect timing



## Expand business or residential voice service revenues and realize operational efficiencies with GR-909 integrated loop testing

As part of the Adit® 600 solution, the FXS 8C 8-Channel Voice Service Card enables a high capacity platform for a range of integrated voice and data service offerings. The Adit 600 platform's carrier-grade design, along with the FXS 8C Service Card's GR-909 loop test capability, offer a range of deployment options, including customer premises and local loop termination in the service provider's point of presence. GR-909 loop test capability provides service providers with a valuable tool to help quickly diagnose customer service issues, which results in enhanced customer care.

The FXS 8C Service Card can be inserted into any card slot of the six-slot Adit 600 Multi-service Delivery Terminal. This allows the provisioning of up to 48 FXS lines in a single chassis and up to 96 lines in two side-by-side units occupying just two rack units of space. The lines can be configured as FXS loop-start or ground-start interfaces, which can be used to deploy either external phone lines, or on-premises customer business line services from T1 access lines.

A unique range of software-controlled signaling capabilities designed into the FXS voice service cards connect virtually any type of 2-wire battery-feed telephone line service. Supported features include caller ID, calling party disconnect, distinctive ringing, ground start, and E&M signaling conversion. V.90 transmission is supported for optimal dial-up modem performance.

The FXS 8C is supported with several local and remote management options. The card can be configured and managed locally using the Command Line Interface (CLI). On-site installation and maintenance is supported with multi-color channel status LEDs for monitoring call progress and channel status. Remote management is accomplished directly either over an in-band DS0 management channel or via a separate SNMP Ethernet connection. Alternatively, remote management can be accomplished through the Access Navigator® over the Facility Data Link (FDL).

## Technical Specifications for the FXS 8C 8-channel Voice Service Card

### Components :

- Requires Adit 600 Dual T1 or E1 Controller Card software release 9.3 or higher

### Management :

- Command Line Interface (CLI)

### FXS Transmission Performance :

- Return loss: ERL  $\geq 19$  dB, SRL  $\geq 11$  dB with respect to  $900 \Omega + 2.16\mu\text{F}$
- Trans-hybrid loss: THL @1010 Hz  $>23$  dB at frequencies between 310 Hz and 3210 Hz  $>16$  dB with respect to  $900 \Omega + 2.16\mu\text{F}$
- Idle Noise: A/D  $<19$  dBmC, D/A  $<15$  dBmC
- Crosstalk:  $<65$  dB
- Signal/distortion:
  - $>33$  dB @ 0 dBm0 to  $-30$  dBm0
  - $>27$  dB @  $-30$  dBm0 to  $-40$  dBm0
  - $>22$  dB @  $-40$  dBm0 to  $-45$  dBm0
- Terminating Impedances: 19 selectable impedances
- Transmit gain/loss:  $+6$  dB to  $-12$  dB (in .25 dB increments) software selectable
- Receive gain/loss:  $+6$  dB to  $-12$  dB (in .25 dB increments) software selectable
- Overload:
  - $\leq 0.5$  dB @  $+3$  dB
  - $\leq 1.8$  dB @  $+6$  dB
  - $\leq 4.5$  dB @  $+9$  dB
- Frequency Response:  $+0.25$  dB  $-1.5$  dB from 300 Hz to 3400 Hz (relative to 1010Hz)
- Longitudinal balance:  $>58$  dB per NEBS GR-57 and TIA-464-C
- Modem support: Full compatibility with V.90 modems

### FXS Signaling Performance :

- DC Loop Range:  $\geq 1700 \Omega$
- Loop Feed: Nominal 27 mA with automatic battery switching
- Off-Hook Detection: Detects tip/ring currents  $>14$  mA
- Ring Ground: Detects ring ground currents  $>33$  mA
- Ringing Voltage: 85 V rms, 20 Hz, optionally 25 Hz
- Maximum Ringers: 5 REN, FCC Class B ringers
- Internal Ringing Cadence: 2 seconds on, 4 seconds off for E&M wink start conversion modes
- Control Technique: Solid-state with no mechanical relays
- CLASS<sup>SM</sup> features supported: Calling party ID, three-way calling, and distinctive ringing
- Calling Party Disconnect: Calling party (forward) disconnect provides 2 second current interruption to disconnect answering devices and modems – requires E&M signaling on the T1
- FXS Signaling: FXS loop start or FXS ground start with LS/GS selection per channel.
- FXSDN Signaling: E&M immediate or wink start with ring-back tone for carrier services such as Megacom<sup>®</sup>, Flexpath<sup>®</sup>, DSS<sup>®</sup>, VPN<sup>®</sup>, VNET<sup>®</sup>, etc. Wink delay for advanced ANI/DNIS 800 number services and Direct Inward-Dial (DID) conversion. R2 signaling for E1 applications.
- Encoding: Selectable for  $\mu$ -Law and A-Law

### GR-909 Line Tests :

- Hazardous potential: DC voltage  $>135$  V or an AC voltage  $>50$  V
- Foreign electromotive force: DC voltage  $>6$  volts or an AC voltage  $>10$  V
- Resistive faults: resistance tip-ring, tip-GND (ground), ring-GND
- Receiver off-hook (differentiated from a short tip-ring)

### Power :

- 15 W maximum

### Regulatory Approvals :

- USA
  - UL60950
  - FCC Part 15, Class A
  - FCC Part 68 lightning protection - interbuilding levels
  - Designed to NEBS Level-3 for type 2 and 4 equipment (not certified)
- Canada
  - CSA C22.2 No. 60950-00
  - ICES-003, Class A
- European Union
  - EN 55022, Class A
  - EN 60950, Safety of Information Technology Equipment
  - EN 61000-3-2, Harmonics
  - EN 61000-3-3, Flicker
  - EN 55024, Immunity
- Australia/New Zealand
  - AS/NZS 60950
  - AS/NZS CISPR22, Class A

### Physical :

- FXS connections made on RJ21-X telco connector rear panel
- Dimensions:
  - 3.5 in (H) x 0.75 in (W) x 11.25 in (D)
  - 8.9 cm (H) x 1.9 cm (W) x 28.6 cm (D)
- Weight: 5.8 oz (0.16 kg)

### Environment :

- Operating temperature range:  $0^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  ( $32^{\circ}\text{F}$  to  $104^{\circ}\text{F}$ )
- Storage temperature range:  $-40^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  to  $158^{\circ}\text{F}$ )
- Cooling method is by free air convection and requires long axis of unit to be mounted horizontally
- Maximum operating altitude: 3,048 m (10,000 ft)
- Maximum non-operating altitude: 12,192 m (40,000 ft)
- Relative humidity (non-condensing) range: 0% to 95%