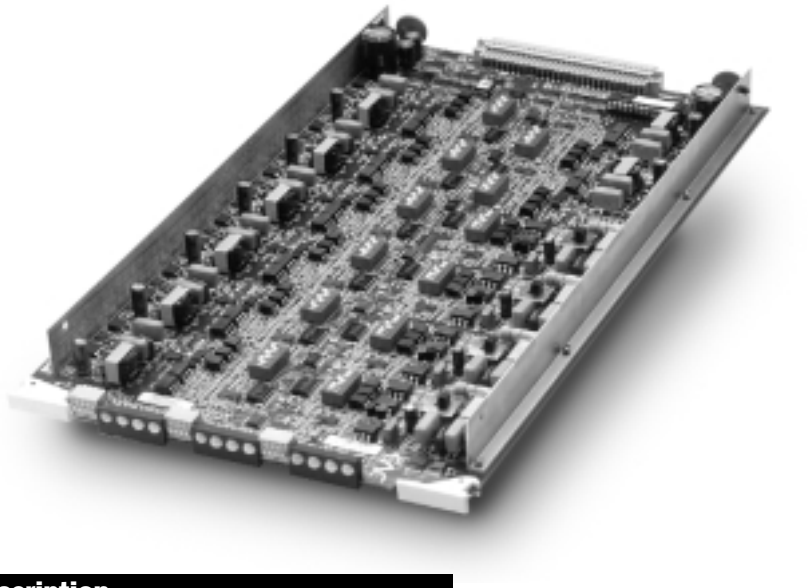
4 FXO + 8 FXS Modular Voice Card



Carrier Access Corporation's 4 FXO + 8 FXS Voice Card provides additional voice channel modularity options for the Access Bank I, Access Bank II and Access Exchange products. This mixed-services card combines 4 channels of FXO or DPT functionality with 8 channels of FXS, FXSDN or PLARD functionality. Access Bank family products can thus be equipped with 4, 8, 12, 16 or 24 FXO /DPT channels, in combination with other services.

Operational Description

CAC's Modular Voice Card is equipped with 4 FXO circuits and 8 FXS circuits to enable additional modularity options when deploying mixed voice circuit types. The FXO and FXS circuits have the same feature sets as CAC's FXS 12-Channel Voice Card and FXO/DPT 12-Channel Voice Card on respective channels.

The Foreign Exchange Office (FXO) and Dial Pulse Termination (DPT) channels sink battery current and detect ringing voltage provided by a connected Central Office (CO) line or PBX extension. The FXO function provides a method to transport dial tone lines over T1 circuits with capabilities to pass hook flash and calling party disconnect features. The DPT function provides the termination of DID services.

The Foreign Exchange Station (FXS) channels deliver loop-start or ground-start telephone lines to key systems, off-premises extensions, facsimile machines, modems, PBXs and other analog telephone devices. The FXS card supports calling party disconnect (CPD) and CLASS® features including Caller ID and Distinctive Ringing.

The front of the card contains 12 multi-color LEDs for monitoring channel status, plus DIP switches for selecting signaling options and card busy/idle conditions. The remaining DIP switches on the board are used for transmit and receive gain/loss settings.

Physical Description

The FXS card measures 7.8" x 13.6" and slides into the back of the Access Bank® I, Access Bank® II, or Access Exchange™ T1 terminal products.

4 FXO + 8 FXS Card Features and Advantages

- Four channel modularity enables efficient equipment utilization
- Carrier Class service quality
  - FXS channels provide 3-mile loop range and full-power ringing
  - Full compatibility with V.90/V.34, 56K modems
  - Fuseless overvoltage and overcurrent safety protection reduces truck-rolls
  - Reliable solid-state signaling for long life time
  - CAC patented automatic impedance balancing adapts to line conditions and modems
- FXO/DPT channels support DID and DNIS carrier services
- E&M signaling conversions configurable per card
- Support for CLASS® features including Caller ID and Distinctive Ringing
- Channel status LEDs for each circuit show call progress: incoming, outgoing, answer

CARRIER ACCESS CORPORATION®

Technical Specifications

FXO/FXS Transmission Performance

Return Loss	ERL > 28dB, SRL > 20dB with respect to 900Ω +2.16µF
Transhybrid Loss	ERL > 28dB, SRL > 20dB with respect to 900Ω +2.16µF
Idle Noise	A/D < 15 dBrnC0, D/A, 10dBrnC0
Crosstalk Coupling	< 80dB at 0dBm0
Signal/Distortion	> 45dB with 1004Hz, 0dBm0 input
Overload	+3.0dBm/900Ω
Frequency Response	+0.25dB, -1.0dB from 300 to 3400Hz
Encoding	µ-Law 255 as defined in CCITT G.712
Terminating Impedance	900Ω + 2.16µF

FXS Transmission Performance

Transmit Gain/Loss	0 to -9dB, switch selectable per channel
Receive Gain/Loss	0 to -9dB, switch selectable per channel
Modem Support	Full compatibility with V.90/V.34 modems Patented automatic analog impedance adapts to various modems and line lengths

FXO Transmission Performance

Transmit Gain/Loss	+9 to -9 dB, switch selectable per channel
Receive Gain/Loss	+9 to -9 dB, switch selectable per channel

FXS Signaling Performance

DC Loop Range	1200Ω (3miles on 24 AWG + 300Ω telephone), Exceeds EIA/TIA-464A and Bellcore® TR-57
Loop Feed	Nominal -48VDC with 30mA current limit
Ringing Voltage	All-channel simultaneous ringing power, 85Vrms, 20Hz, thermal current limited

FXS Signaling Performance (cont)

Maximum Ringer/Line	5 REN, FCC Class B ringers
Ring Trip Time	>50ms, <150 ms with 1500Ω termination
Control Technique	Solid-state with no mechanical relays
Overvoltage	600Vrms without fire hazard per UL 1459, 2nd ed., FCC part 68 lightning protection, solid-state (fuseless) overvoltage and over current protection
Off-Hook Detection	Detects tip or ring currents >8mA, rejects for <4mA
Tip Ground	<200Ω with 30mA current limit
Ring Ground	Detects ring ground currents >8mA
Internal Ringing Cadence	Ringing cadence is 2 seconds on, 4 seconds off
CLASS® Support	Supports CLASS® features such as Caller 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
FXS Signaling	FXS loop-start or FXS ground-start with automatic LS/GS selection per channel
FXSDN Signaling	FXSDN operation: E&M immediate or wink start to either loop-start or ground-start conversion with ringback tone. Wink delay option
PLARD	Private Line Automatic Ringdown (PLARD) E&M immediate start signaling with ringback tone to network
Trunk Processing Option	One switch per card selects busy (tip lead grounded) or idle (tip lead open)

FXO Signaling Performance

DC Loop Range	4000Ω DC signaling
Ringer Equivalency Number (REN)	0.4B (AC)
Ringer Voltage Detection	Detects Class A and B ringing, follows distinctive ringing
FXO DC Resistance	100Ω effective with electronic hold
Maximum DC	150 mA
Control Technique	Solid-state, no mechanical relays
Overvoltage	600 Vrms without fire hazard per UL 1459, FCC Part 68 lightning protection
Protection	Solid-state (fuseless) overvoltage and overcurrent protection
Termination Type	FXO loop-start or FXO ground-start, switch selectable per channel
Signaling Selection	DPT or FXO functionality enabled per channel
Calling Party Disconnect	Calling party disconnect detects and forwards current interruption to disconnect answering devices and modems

Compliance

FCC Part 68, CS-03 listed for connection to PSTN

FCC Part 15, Class A Radiated Emissions Control

NRTL safety listed: UL 1459, CSA

National Electrical Code 1996 safety requirements

Environmental

Operating Temperature	0° to 50°C (32° to 122°F)
Relative Humidity	0 to 95%

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