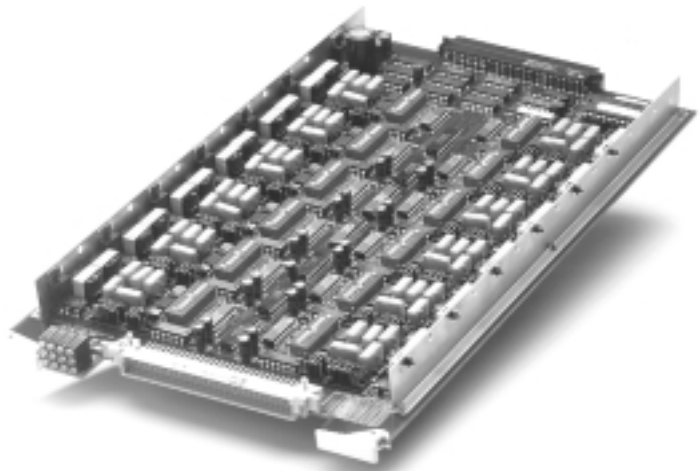


4-Wire E&M/ Transmission Only (E&M/TO) 12-Channel Analog Card



Carrier Access

Corporation's 4-Wire

E&M/Transmission

Only (E&M/TO) voice

card delivers 12

analog channels

for connecting T1

services or switch

interfaces

to PBX tie lines,

carrier facilities,

or 4-Wire modems.

Each channel is

programmable to

support signaling

types I, II, IV

or V, using up to

4 signaling and

transmission pairs

per channel (E/M,

SG/SB, T/R and

TI/RI).

Operational Description

The 4-Wire E&M/Transmission Only (E&M/TO) voice card is used in the Access Bank® family of voice and data terminal products. It delivers 12 analog channels for connecting to PBX tie lines, carrier facilities, or 4-Wire modems. Each channel is programmable to support signalling types I, II, IV or V, using up to four signalling and transmission pairs per channel (E/M, SG/SB, T/R and T1/R1).

The E&M/TO card receives T1 signaling, control logic, and -48VDC power through a connector on the LIU or Controller card. Twelve channel status LEDs are located next to the E&M signaling line connector on the Access Bank back plate. Each channel has three physical jumpers that allow the channel to be configured at installation time for E&M Types I, II, IV or V signaling. Each channel also has 10 DIP switches that allow the receive and transmit attenuation or gain to be individually set from -21dB to +10dB. Additionally, there are four DIP switches located on each card for setting regular or clear channel (TO) E&M signaling operation and selecting busy or idle during carrier failure.

Access Bank products sold with one or two 4-Wire E&M card(s) in place include an E&M rear faceplate. The E&M rear faceplate may also be purchased separately. When the 4-Wire E&M card is used in conjunction with another analog line card in an Access Bank I or II, the 25-pair connector on the front panel terminates the other line card, while the required external cable (Normal or Tandem) terminates the 4-Wire E&M card.

4-Wire E&M/TO Card Features and Advantages

- E&M signaling Types I, II, IV, or V
- Configurable for normal or tandem signaling modes
- Reliable solid-state loop signaling relays
- Transmit and receive gains selectable from -21dB to +10dB
- Transmission Only (TO) configuration
- Per-channel settings and channel status indicators
- Fuseless overvoltage and over current safety protection
- 25-pair cable adapters provide Universal Service Order Code (USOC) wiring

Technical Specifications

The E&M/TO card requires an external interface cable that determines if the card is operating as Channel Equipment (Normal multiplexer mode) or as Switching Equipment (Tandem mode) for back-to-back tandem applications (sometimes referred to as Reverse E&M or Pulse Link Repeater). The Transmission Only (TO) mode provides dedicated 4-Wire transmit and receive paths to radio and modem equipment. Transmission Only uses the identical 4-Wire E&M physical interface, but suppresses the A/B bit-robbled signaling, thereby maximizing the transmission performance per channel for dedicated operations.

E&M Transmission Performance

Transmit Gain/Loss	-21 to +10dB in 1.0dB increments, switch selectable per channel
Receive Gain/Loss	-21 to +10dB in 1.0dB increments, switch selectable per channel
Transmit TLP Maximum	+10dBm
Receive TLP Maximum	+8.5dBm
Signal/Distortion	> 45dB with 1004Hz, 0dBm0 input
Overload	+3dBm
Frequency Response	-0.15 to +0.15dB, 300 - 3000Hz
Encoding	μ -Law 255 for U.S. and Canada as defined in CCITT G.712
Terminating Impedance	600 Ω
Return Loss	>34dB, 300 - 3000Hz
Idle Channel Noise	<20dBnCO
Longitudinal Balance	>63dB (per IEEE standard 455-1985 FCC Part 68.310)
Modems	Full compatibility with V.90 modems

E&M Signaling Performance

DC Loop Range	3000 Ω
Protection	Solid-state (fuseless) overvoltage and overcurrent protection
Control Technique	Solid-state, no mechanical relays
Overvoltage	600Vrms without fire hazard per UL 1459, 2nd ed., FCC Part 68 lightning protection, solid-state (fuseless) over-voltage and over-current protection
Signaling Selection	E&M Type I,II,IV,V (Normal or Tandem mode) and Transmission-Only
Trunk Processing Option	One switch per E&M card selects busy (driver relay closed) or idle (driver relay open)
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	
Operational Temperature	0° to 50°C (32° to 122°F)
Relative Humidity	0 to 95%



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