encore networks™

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Specifications for the Four-Wire E&M Card

This document lists specifications for the four-wire E&M card. (The four-wire E&M card is available for the BANDIT III.)

A.1 Four-Wire E&M Voice

Table A-1. Four-Wire E&M Connector Pinout (RJ48)

Pin	Signal	Description
1	SB	Signal Battery
2	M-Lead	
3	RX-	Audio In -
4	TX-	Audio Out -
5	TX+	Audio Out +
6	RX+	Audio In +
7	E-Lead	
8	SG	Signal Ground

Table A-2. Audio Parameters

Parameter	Value
Maximum Output Level	+1.5 dBm
Maximum Input Level	+4 dBm
Nominal Input Impedance	600 ohm
Nominal Output Impedance	600 ohm
Gain Adjust Transmit/Receive	±7 dB
Gain Adjust Steps	±0.5 dB
Idle Channel Noise, C-Message Weighted	< 18 dBrnc0
Idle Channel Noise, Psophometric Weighted	< -74 dBm0p
Frequency Response, 300 Hz to 3,000 Hz	±0.2 dB
Isolation	4,000 V

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Table A-3. Signaling Parameters

Parameter	Value
E&M Signaling Type	I, II, III, IV, or V
Configurable Signaling Type	Trunk Circuit or Signaling Unit
Input Signaling Detector Resistance	4.02 k-ohm
Input Signaling Detection Voltage	-24 V to -60 V
Maximum Output Signaling On Resistance	20 ohm
Maximum Output Signaling Off Resistance	1 G-ohm
Maximum Output Signaling Current	35 mA
Output Signaling Voltage	-20 V to -60 V
E&M Circuit Isolation	4,000 V

A.2 E&M Signaling Types

The following diagrams illustrate the four-wire E&M signaling circuits used in the BANDIT III.

Note: Trunk and signaling facilities must share common ground in Type III and Type V. (Use Auxiliary Connector Pin 2.)

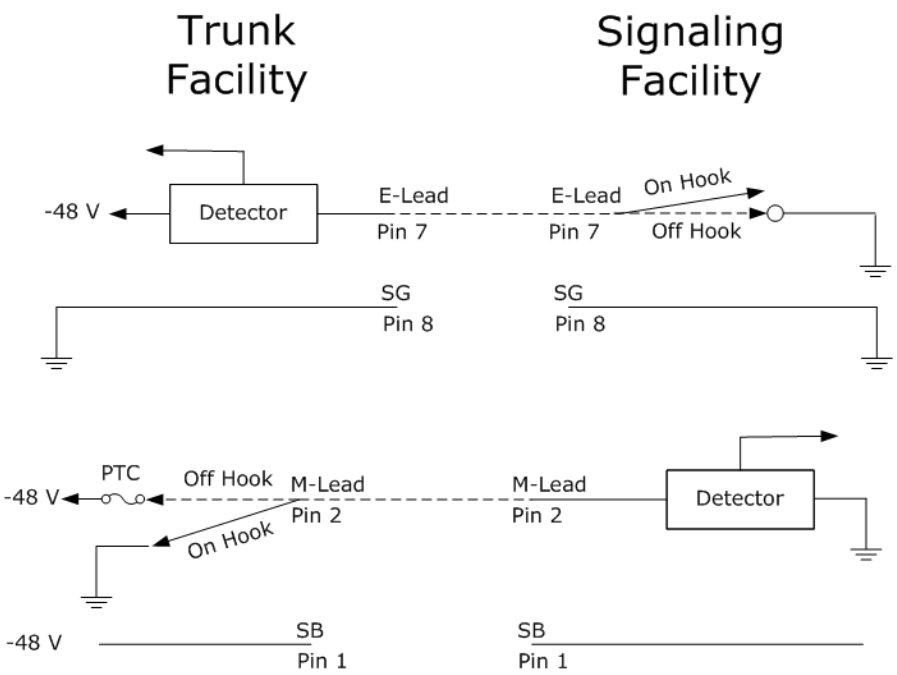

Figure A-1. Four-Wire E&M Type I Signaling

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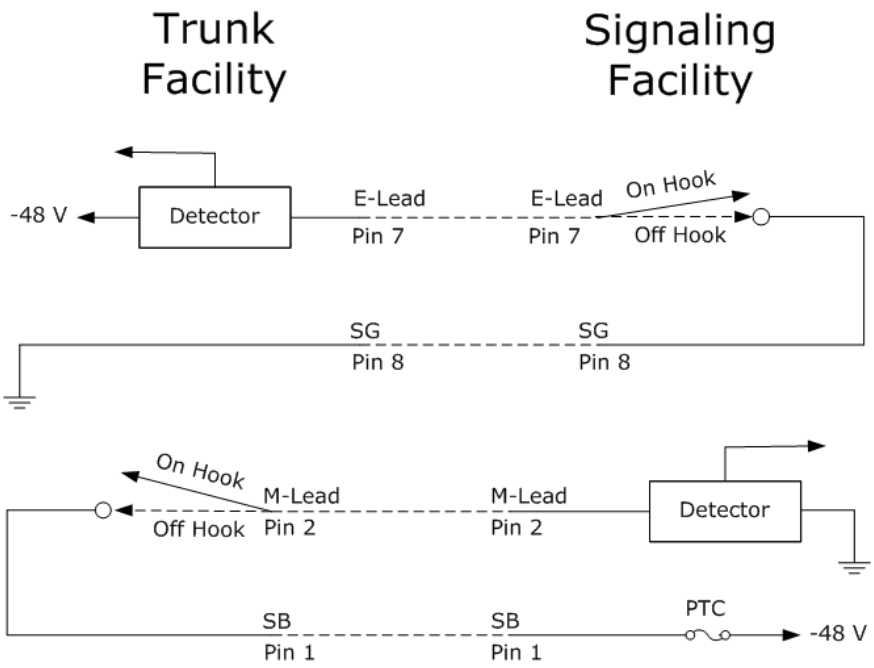

Figure A-2. Four-Wire E&M Type II Signaling

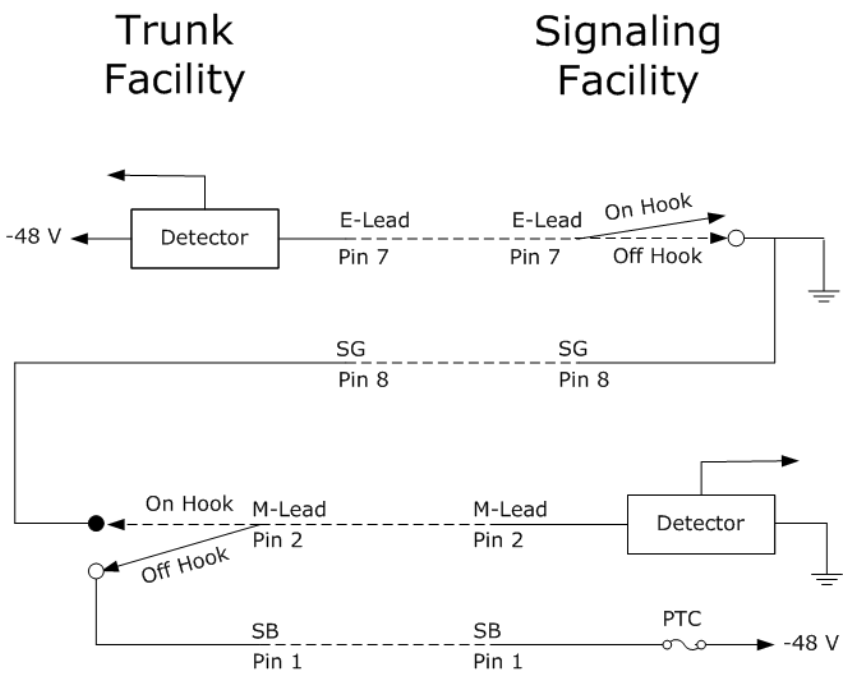

Figure A-3. Four-Wire E&M Type III Signaling

Note: Trunk and signaling facilities for Type III must share common ground. (Use Auxiliary Connector Pin 2.)

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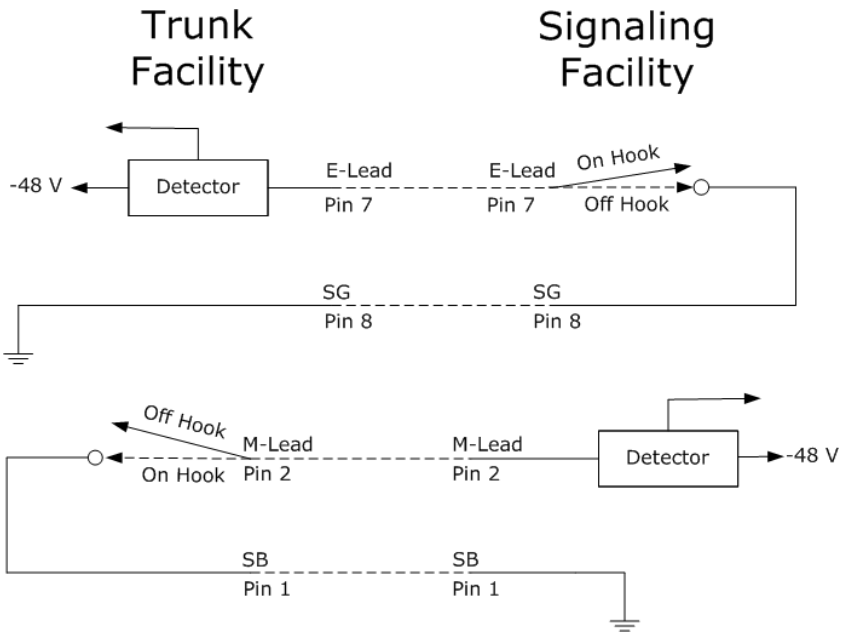

Figure A-4. Four-Wire E&M Type IV Signaling

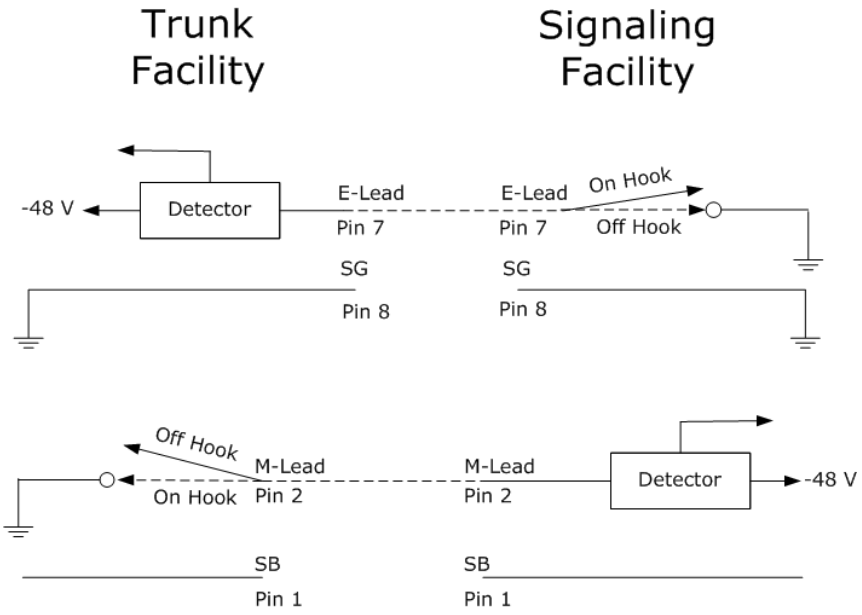

Figure A-5. Four-Wire E&M Type V Signaling

Note: Trunk and signaling facilities for Type V must share common ground. (Use Auxiliary Connector Pin 2.)

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A.3 Auxiliary Input and Output Signals for Four-Wire E&M

The auxiliary input–output signals are multipurpose—for example, an auxiliary signal can be used for external alarm detection and generation. Battery voltage is selectable 5 V (used by auxiliary signals) or -48 V (used by E&M signaling). Figure A-6 and Figure A-7 illustrate equivalent auxiliary in and out circuits.

Table A-4. Auxiliary Connector Pinout (8-Pin Phoenix)

Pin	Description
1	Battery Voltage
2	Battery and E&M Signaling Return
3	Aux In 1
4	Aux In 2
5	Aux In 3
6	Aux In 4
7	Aux Out 1
8	Aux Out 2

Table A-5. Auxiliary Input–Output Signals

Signal	Minimum	Nominal	Maximum
Battery Voltage (Option 1), default	-44 V	-48 V	-52 V
Battery Voltage (Option 2)	+4.5 V	+5 V	+5.5 V
Battery Power (Option 1), default		1.5 W	
Battery Power (Option 2)		1 W	
Auxiliary In, Resistance		2 k-ohm	
Auxiliary In, On Voltage	-24 V	2.5 V	
Auxiliary In, Off Voltage	open	3 V	+24 V
Auxiliary Out, Off Voltage		+5 V	
Auxiliary Out, Off Resistance to +5 V		4.02 k-ohm	
Auxiliary Out, On Voltage		0 V	
Auxiliary Out, On Resistance to GND		20 ohm	
Auxiliary Out, On Sink Current			50 mA

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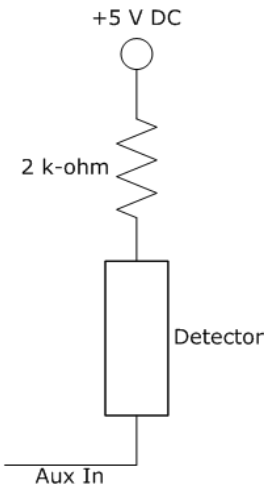

Figure A-6. Auxiliary In Equivalent Circuit

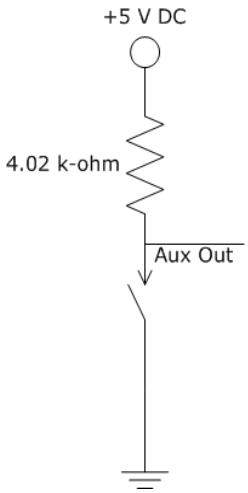

Figure A-7. Auxiliary Out Equivalent Circuit