INSTALLATION INSTRUCTIONS

MicroComm DXI

AIB-100/400 Audio Input Board

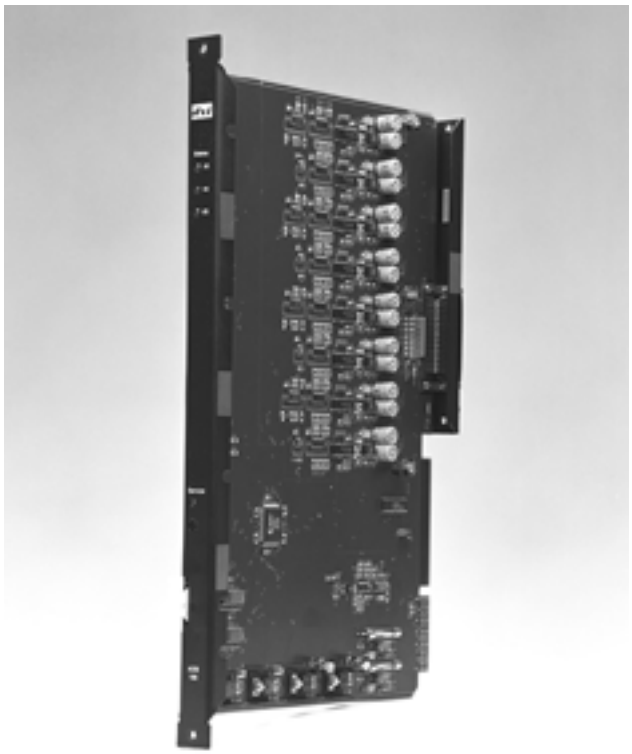
1. Intent & Scope

This document describes the installation procedure for the AIB-100 and AIB-400 Audio Input Boards.

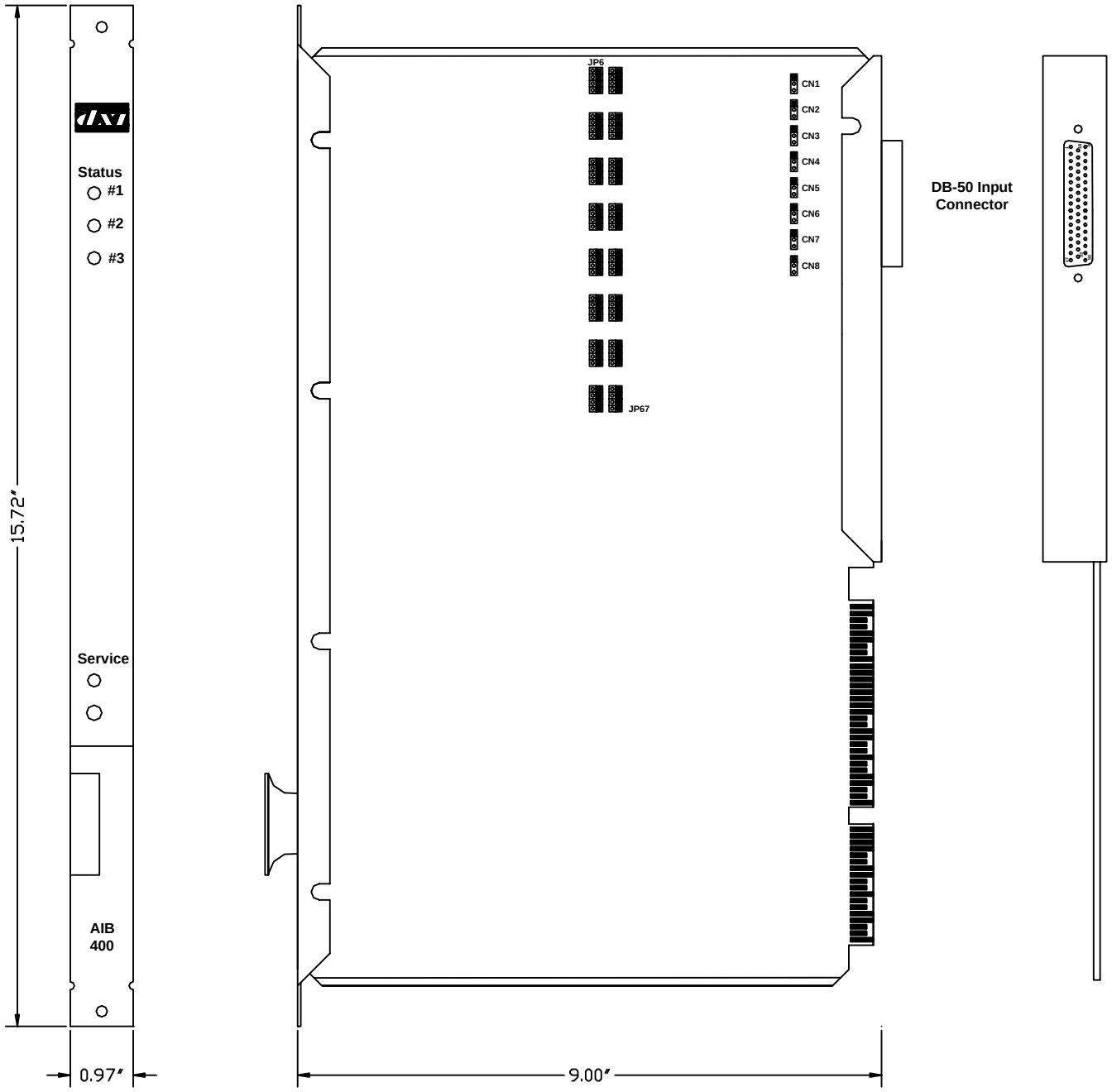
2. Description

The AIB-100/400 Audio Input Board accepts up to eight audio input signals from external sources such as radio tuners, tape decks, microphones, telephone system interface modules, and two-way radio systems. The signal levels can range from low-level microphone levels to nominal 1-volt peak line level signals. Audio levels for each input can be adjusted separately by software control. Positioning jumpers on the AIB-400 printed circuit board allows a dc bias voltage to be placed on the audio lines and permits either an electret or phantom powered microphone to act as an audio input source. The AIB-100 is used in systems that use SAB-100 Station Audio Boards, while the AIB-400 is used in systems that use either the SAB-300, SAB-400 or SAB-401 Station Audio Boards.

Each input channel is provided with an input control signal interface (an Enable signal) and a relay contact output. The relay contacts can be configured as either a normally open or a normally closed contacts.



AIB-100



AIB-400 Showing DB-50 Connector, Location of CN1 ... CN8, and Location of JP6 ... JP67

3. Input Channels

Each input channel consists of:

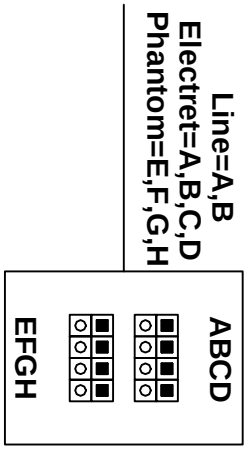
two audio input terminals and a shield terminal (connected to Gnd)

one enable-input terminal (used with a common ground Gnd on pins 49 and 50 of the terminal block or the audio shield)

two terminals that provide either a normally open or a normally closed relay output

3.1 Audio Input

Each audio input to the AIB can be set independently for line, electret microphone, or phantom powered microphone inputs. The AIB inputs can be configured for the various possibilities by placing appropriate jumpers in the headers JP6 ... JP67. The headers are arranged in groups, each group is associated with one of the input channels. The diagram above of the AIB-400 shows the physical location of the eight groups. The top group of headers JP6 ... JP13 corresponds to channel 1, the second group of headers JP14 ... JP21 correspond to channel 2, ... the eighth group JP60 ... JP67 correspond to channel 8. The following diagram for a group indicates how the jumpers are arranged for the various possible input sources.



Jumper Block for Audio Inputs

The connection for Line Input is used for line level inputs (1 volt peak). The input circuitry is changed by inserting the appropriate jumpers. The Electret and Phantom powered microphone inputs provide a dc bias voltage to the input circuitry to power the microphones.

In the software configuration, the input can be set for Line or Microphone. The Microphone input setting provides an additional gain of 20 (26dB) compared to the Line setting. Additional gain adjustments can be made by the Initial Sensitivity parameter in the software configuration for the station.

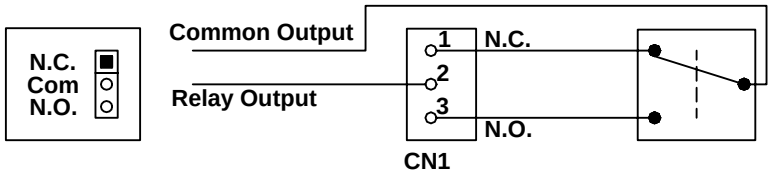
3.2 Enable Input

The Enable Input is activated by connecting a low resistance between the Enable-input terminal and ground (Gnd). The Gnd connection can be made to the audio shield ground or the common ground pins 49 or 50 on the terminal blocks. Any resistance value less than 2.4 K ohms will be detected as a logical '0' input signal, while any resistance value greater than 200 K ohms will be detected as a logical '1' signal. The Enable signal is available to the DXI system.

3.3 Relay Outputs

With each channel, a two terminal relay output is available. Using a jumper, the relay output can be configured to act as either a normally open or a normally closed contact. Each channel can be configured independently. The header CN1 is associated with Relay Output 1, CN2 with Relay Output 2 ... CN8 with Relay Output 8. The following diagram shows the position of the two terminal jumper for the two possible output configurations. Connecting a jumper between pin 2 and pin 3 of the CNX (X=1 ... 8) connector makes a normally open contact

output. Connecting a jumper between pin 2 and 1 makes a normally closed contact output. (The diagram on the left is on the printed circuit board and indicates the jumper position for the normally open or normally closed configuration.)



Relay - Showing Jumper Positions for Normally Open or Normally Closed Output

4. Field Interface Cable

The Audio Input Boards require a CBL-120 cable to connect from the board's DB-50 connector to the terminal block. The terminal block acts as the interface to the field wiring. The CBL-120 cable incorporates two 4 pair shielded twisted pair audio cables plus two 6 pair unshielded cables. The unshielded wires provide control input and status output signals for each channel. The field wiring from the terminal blocks should not exceed 2500 feet (750 meters).

The DB-50 female connector is located at the rear of the AIB-100/400. The connector position is shown on the figure on page 2.

The table on the following page gives the pin numbers, wire colors, and terminal block position for each of the audio input signals when a CBL-120 cable is used. The cable should be terminated at the terminal block in the fashion shown on the next page. One 4 pair shielded audio cable and one 6 pair unshieled cable are taped together and labeled CONN 1, the other two cables are taped together and labeled CONN 2. The CONN 1 group is associated with channels 1-4, while the CONN 2 group is used for channels 5-8.

The audio lines for the field wiring should be shielded twisted 22 gauge pairs. The shields should be connected to the terminal block shield terminals and the shield should be left open at the other end of the audio line.

DB-50 Pin Number	Signal Name	Wire Color 4 Pair Shielded	Wire Color* 6 Pair Unshielded	Terminal Block Pin Number
1	Audio 1 +	Black		1
18	Audio 1 -	Red		2
34	Audio 1 Shield (Gnd) / Input Common 1	BR Shield		3
2	Enable Input 1		White-Blue	4
19	Relay Common 1		Blue-White (Blue)	5
35	Relay Output 1		White-Orange	6
3	Audio 2 +	Black		7
20	Audio 2 -	White		8
36	Audio 2 Shield (Gnd) / Input Common 2	BW Shield		9
4	Enable Input 2		Orange-White (Orange)	10
21	Relay Common 2		White-Green	11
37	Relay Output 2		Green-White (Green)	12
5	Audio 3 +	Black		13
22	Audio 3 -	Green		14
38	Audio 3 Shield (Gnd) / Input Common 3	BG Shield		15
6	Enable Input 3		White-Brown	16
23	Relay Common 3		Brown-White (Brown)	17
39	Relay Output 3		White-Grey	18
7	Audio 4 +	Black		19
24	Audio 4 -	Blue		20
40	Audio 4 Shield (Gnd) / Input Common 4	BBl Shield		21
8	Enable Input 4		Grey-White (Grey)	22
25	Relay Common 4		Red-Blue (Red)	23
41	Relay Output 4		Blue-Red	24
9	Audio 5 +	Black		25
26	Audio 5 -	Red		26
42	Audio 5 Shield (Gnd) / Input Common 5	BR Shield		27
10	Enable Input 5		White-Blue	28
27	Relay Common 5		Blue-White (Blue)	29
43	Relay Output 5		White-Orange	30
11	Audio 6 +	Black		31
28	Audio 6 -	White		32
44	Audio 6 Shield (Gnd) / Input Common 6	BW Shield		33
12	Enable Input 6		Orange-White (Orange)	34
29	Relay Common 6		White-Green	35
45	Relay Output 6		Green-White (Green)	36
13	Audio 7 +	Black		37
30	Audio 7 -	Green		38
46	Audio 7 Shield (Gnd) / Input Common 7	BG Shield		39
14	Enable Input 7		White-Brown	40
31	Relay Common 7		Brown-White (Brown)	41
47	Relay Output 7		White-Grey	42
15	Audio 8 +	Black		43
32	Audio 8 -	Blue		44
48	Audio 8 Shield (Gnd) / Input Common 8	BBl Shield		45
16	Enable Input 8		Grey-White (Grey)	46
33	Relay Common 8		Red-Blue (Red)	47
49	Relay Output 8		Blue-Red	48
17	Gnd	NC	NC	49
50	Gnd	NC	NC	50

*Note: Two variations of the cable are manufactured. One variation is for the both wires of a pair to be striped i.e. the first pair consists of a white/blue striped wire and a blue/white striped wire. A second variation is for each cable pair to consist of a solid color wire and a striped wire i.e. the first pair has a solid blue wire and a blue/white striped wire (the solid color for the pair is shown in brackets).

4. System Planning Worksheet

The following page contains a blank system planning worksheet for the AIB-100/400 Audio Input Board. It contains a cross reference that includes the I/O board's mating connector, pin signal identification, field wiring cable conductor color, terminal block terminal point, and space to identify the field connection.

Card Cage: _____ Card Slot: _____

DB-50 Pin Number	Signal Name	Wire Color*	Terminal Block Pin Number	Connect To
1	Audio 1 +	Black	1	
18	Audio 1 -	Red	2	
34	Audio 1 Shield (Gnd) / Input Common 1	BR Shield	3	
2	Enable Input 1	White-Blue	4	
19	Relay Common 1	Blue-White (Blue)	5	
35	Relay Output 1	White-Orange	6	
3	Audio 2 +	Black	7	
20	Audio 2 -	White	8	
36	Audio 2 Shield (Gnd) / Input Common 2	BW Shield	9	
4	Enable Input 2	Orange-White (Orange)	10	
21	Relay Common 2	White-Green	11	
37	Relay Output 2	Green-White (Green)	12	
5	Audio 3 +	Black	13	
22	Audio 3 -	Green	14	
38	Audio 3 Shield (Gnd) / Input Common 3	BG Shield	15	
6	Enable Input 3	White-Brown	16	
23	Relay Common 3	Brown-White (Brown)	17	
39	Relay Output 3	White-Grey	18	
7	Audio 4 +	Black	19	
24	Audio 4 -	Blue	20	
40	Audio 4 Shield (Gnd) / Input Common 4	BBl Shield	21	
8	Enable Input 4	Grey-White (Grey)	22	
25	Relay Common 4	Red-Blue (Red)	23	
41	Relay Output 4	Blue-Red	24	
9	Audio 5 +	Black	25	
26	Audio 5 -	Red	26	
42	Audio 5 Shield (Gnd) / Input Common 5	BR Shield	27	
10	Enable Input 5	White-Blue	28	
27	Relay Common 5	Blue-White (Blue)	29	
43	Relay Output 5	White-Orange	30	
11	Audio 6 +	Black	31	
28	Audio 6 -	White	32	
44	Audio 6 Shield (Gnd) / Input Common 6	BW Shield	33	
12	Enable Input 6	Orange-White (Orange)	34	
29	Relay Common 6	White-Green	35	
45	Relay Output 6	Green-White (Green)	36	
13	Audio 7 +	Black	37	
30	Audio 7 -	Green	38	
46	Audio 7 Shield (Gnd) / Input Common 7	BG Shield	39	
14	Enable Input 7	White-Brown	40	
31	Relay Common 7	Brown-White (Brown)	41	
47	Relay Output 7	White-Grey	42	
15	Audio 8 +	Black	43	
32	Audio 8 -	Blue	44	
48	Audio 8 Shield (Gnd) / Input Common 8	BBl Shield	45	
16	Enable Input 8	Grey-White (Grey)	46	
33	Relay Common 8	Red-Blue (Red)	47	
49	Relay Output 8	Blue-Red	48	
17	Gnd	NC	49	
50	Gnd	NC	50	

*Note: Two variations of the cable are manufactured. One variation is for the both wires of a pair to be striped i.e. the first pair consists of a white/blue striped wire and a blue/white striped wire. A second variation is for each cable pair to consist of a solid color wire and a striped wire i.e. the first pair has a solid blue wire and a blue/white striped wire (the solid color for the pair is shown in brackets).