INSTALLATION INSTRUCTIONS

MicroComm DXI

SAB-400 and SAB-401 Station Audio Board

1. Intent & Scope

This document describes the installation procedure for the SAB-400 and SAB-401 Station Audio Board.

2. Description

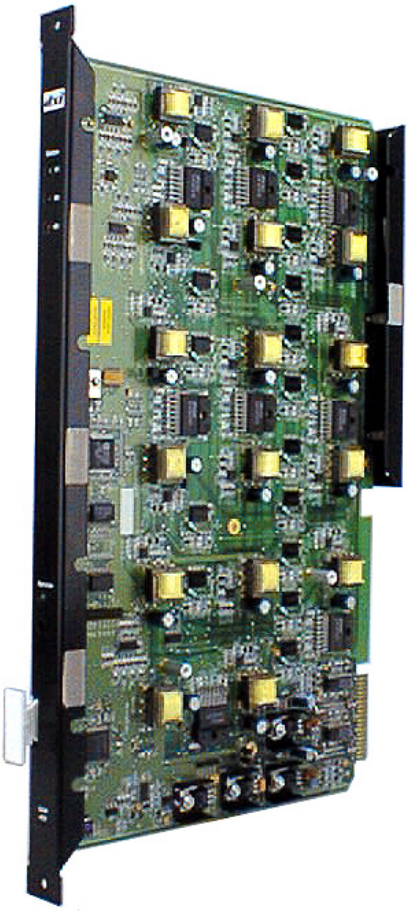
The SAB-400 Station Audio Board is used to connect 400 series intercom stations without LED's and 400 series master stations to the MicroComm DXI system. The SAB-401 Station Audio Board is used to connect 400 series intercom stations with or without LED's and 400 series master stations to the MicroComm DXI system.

The SAB-400 has a total of 17 ports. The audio channel for a full duplex station requires two ports, while the audio channel for a half duplex station requires one port. A SAB-400 can be connected for various combinations of full duplex and half duplex channels. Each station is wired to its own channel on the station audio board. (Restrictions on the way full duplex channels are connected are given in Section 3 - Station Interface.)

Full duplex communication allows both parties to speak and listen at the same time. Full duplex communications can only take place if both end devices are full duplex. Full duplex devices include master stations with handsets and/or headsets, telephone sets and stations with handsets.

Half duplex communication is unidirectional, which means the parties take turns speaking and listening. This form of communication is used between master stations and devices such as intercom stations and loudspeakers.

400 series intercom stations incorporate amplifiers that bring microphone signal levels up to the range of loudspeaker signal levels for cross talk immunity. Generic intercom stations, on the other hand, have microphone audio signal levels that are in the millivolt range, while loudspeaker audio signals levels are in the volts range. Due to the large difference in signal levels, cross talk can occur in cable runs where microphone signals are transmitted at the same time as loudspeaker signals. System planners should take into account the possible interaction of signals and follow standard practices for separating signals of different levels.



SAB-400

3. Station Interface

Each audio port also acts as a switch input port. Up to two switch inputs can be multiplexed onto the audio line. Intercom stations, handsets and talkback loudspeakers have their audio and signaling functions transmitted over a single shielded, twisted pair cable. Intercom audio pairs are connected to ports 1-15, and may be connected to audio input port 16 if a master station does not use it.

Intercom master stations are capable of full duplex operation and, therefore, are connected to the station audio board with two twisted pair cables. Refer to the master station installation bulletins for additional master station data, power, and accessory wiring requirements.

Each intercom station and each master station must have its own channel. A channel for an intercom station requires one audio port, while a channel for a master station requires two audio ports. If there is a single master station it should be connected to Audio port 16 and the Mic port. More than one master (or full duplex devices) can be connected to a SAB-400. Two adjacent ports can be grouped to form a full duplex channel.

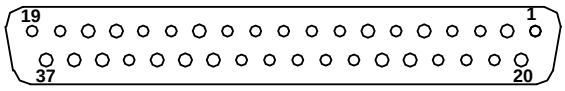
If the SAB-400/401 is installed in a card cage that uses an ACB-101 any two adjacent audio ports can be used to form a full duplex channel. Speaker connections are made to the lowest numbered port, microphone connections

to the highest numbered port. The Mic port cannot be used as a half duplex channel and can only be used as a port for an MAI or desktop master station, not for any other full duplex devices.

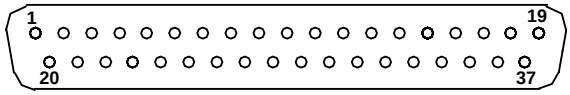
If the SAB-400/401 is installed in a card cage that uses an ACB-100 the groupings are restricted to the audio port combinations of 2-3, 4-5, 6-7, 8-9, 10-11, 12-13, 14-15, and 16-Mic. Speaker connections are made to the even numbered port, microphone connections to the odd numbered port. The same restricitions as descriped previously apply to the Mic port.

4. Field Interface Cable

The Station Audio Board uses a female DB-37 connector to interface to the external audio lines. The Station Audio Board requires a CBL-190 cable to interface the audio inputs to the field wiring. It incorporates 18 individual pairs with a male DB-37 connector on one end (one of the pairs provides ground connection from the SAB-400 to the terminal block).



Female DB-37 Connector



Male DB-37 Connector

The CBL-190 audio cable connects the audio input lines to the female DB-37 connector. The following two tables, one for generic terminal blocks and one for BIX terminal blocks, gives the pin numbers, wire colors, and terminal block position for each of the station audio board signals when a CBL-190 audio cable is used. The cable should be terminated on the terminal block in the fashion shown. Note that in the 400 series signal levels are sufficiently high that it is not necessary to shield the audio lines from the terminal block to the SAB 400. However from the BIX block to the intercom stations shielding is still required.

The field wiring from the terminal block to the intercom station is shielded, twisted pair cable. The shields should be connected to the terminal block (every third position) and in turn all the terminal block inputs (SAB side) labeled Gnd should be connected to terminals 45 and 48. The shielded wire should be left unconnected at the station end.

Two wiring tables are presented, one for a generic terminal block and one for a BIX terminal block.

Wiring Table for Generic Terminal Block

DB37 Pin Number	Signal	SAB Cable Wire Color Provo 12110 18 Pair	SAB Cable Wire Color Belden Standard 19 Pair	Terminal Block Pin Number	
1	Audio 1 +	Blue	Black	1	
20	Audio 1 -	White	Red	2	
	Gnd			3	Audio Shield 1
2	Audio 2 +	Orange	Black	4	
21	Audio 2 -	White	White	5	
	Gnd			6	Audio Shield 2
3	Audio 3 +	Green	Black	7	
22	Audio 3 -	White	Green	8	
	Gnd			9	Audio Shield 3
4	Audio 4 +	Brown	Black	10	
23	Audio 4 -	White	Blue	11	
	Gnd			12	Audio Shield 4
5	Audio 5 +	Slate	Black	13	
24	Audio 5 -	White	Yellow	14	
	Gnd			15	Audio Shield 5
6	Audio 6 +	Blue	Black	16	
25	Audio 6 -	Red	Brown	17	
	Gnd			18	Audio Shield 6
7	Audio 7 +	Orange	Black	19	
26	Audio 7 -	Red	Orange	20	
	Gnd			21	Audio Shield 7
8	Audio 8 +	Green	Red	22	
27	Audio 8 -	Red	White	23	
	Gnd			24	Audio Shield 8
9	Audio 9 +	Brown	Red	25	
28	Audio 9 -	Red	Green	26	
	Gnd			27	Audio Shield 9
10	Audio 10 +	Slate	Red	28	
29	Audio 10 -	Red	Blue	29	
	Gnd			30	Audio Shield 10
11	Audio 11 +	Blue	Red	31	
30	Audio 11 -	Black	Yellow	32	
	Gnd			33	Audio Shield 11
12	Audio 12 +	Orange	Red	34	
31	Audio 12 -	Black	Brown	35	
	Gnd			36	Audio Shield 12
13	Audio 13 +	Green	Red	37	
32	Audio 13 -	Black	Orange	38	
	Gnd			39	Audio Shield 13
14	Audio 14 +	Brown	Green	40	
33	Audio 14 -	Black	White	41	
	Gnd			42	Audio Shield 14
15	Audio 15 +	Slate	Green	43	
34	Audio 15 -	Black	Blue	44	
18	Gnd	* Green	* Green	45	Audio Shield 15
16	Audio 16 +	Blue	Green	46	
35	Audio 16 -	Yellow	Yellow	47	
37	Gnd	* Yellow	* Orange	48	Audio 16 & Mic Shield
17	Master Audio Mic +	Orange	Green	49	
36	Master Audio Mic -	Yellow	Brown	50	

*Ground wire pair. All wiring is polarity sensitive. Pin 19 is also ground.

Wiring Table for BIX Terminal Block

DB37 Pin Number	Signal	SAB Cable Wire Color Provo 12110 18 Pair	SAB Cable Wire Color Belden Standard 19 Pair	Terminal Block Pin Number	
1	Audio 1 +	Blue	Black	1	
20	Audio 1 -	White	Red	2	
	Gnd			3	Audio Shield 1
	Gnd			4	Audio Shield 2
2	Audio 2 +	Orange	Black	5	
21	Audio 2 -	White	White	6	
3	Audio 3 +	Green	Black	7	
22	Audio 3 -	White	Green	8	
	Gnd			9	Audio Shield 3
	Gnd			10	Audio Shield 4
4	Audio 4 +	Brown	Black	11	
23	Audio 4 -	White	Blue	12	
5	Audio 5 +	Slate	Black	13	
24	Audio 5 -	White	Yellow	14	
	Gnd			15	Audio Shield 5
	Gnd			16	Audio Shield 6
6	Audio 6 +	Blue	Black	17	
25	Audio 6 -	Red	Brown	18	
7	Audio 7 +	Orange	Black	19	
26	Audio 7 -	Red	Orange	20	
	Gnd			21	Audio Shield 7
	Gnd			22	Audio Shield 8
8	Audio 8 +	Green	Red	23	
27	Audio 8 -	Red	White	24	
9	Audio 9 +	Brown	Red	25	
28	Audio 9 -	Red	Green	26	
	Gnd			27	Audio Shield 9
	Gnd			28	Audio Shield 10
10	Audio 10 +	Slate	Red	29	
29	Audio 10 -	Red	Blue	30	
11	Audio 11 +	Blue	Red	31	
30	Audio 11 -	Black	Yellow	32	
	Gnd			33	Audio Shield 11
	Gnd			34	Audio Shield 12
12	Audio 12 +	Orange	Red	35	
31	Audio 12 -	Black	Brown	36	
13	Audio 13 +	Green	Red	37	
32	Audio 13 -	Black	Orange	38	
	Gnd			39	Audio Shield 13
	Gnd			40	Audio Shield 14
14	Audio 14 +	Brown	Green	41	
33	Audio 14 -	Black	White	42	
15	Audio 15 +	Slate	Green	43	
34	Audio 15 -	Black	Blue	44	
18	Gnd	* Green	* Green	45	Audio Shield 15
37	Gnd	* Yellow	* Orange	46	Audio 16 & Mic Shield
16	Audio 16 +	Blue	Green	47	
35	Audio 16 -	Yellow	Yellow	48	
17	Master Audio Mic +	Orange	Green	49	
36	Master Audio Mic -	Yellow	Brown	50	

*Ground wire pair. All wiring is polarity sensitive. Pin 19 is also ground.

5. System Planning Worksheet

The following page contains a blank system planning worksheet for the SAB-400 Station Audio Board. It contains a cross reference that includes the I/O board's mating connector, pin signal identification, field wiring cable conductor color, BIX block terminal point, and space to identify the field connection. Note that the * indicates a pair of wires (Gnd) that are connected to BIX block positions 45 and 46. The shields for Audio line 16 and Mic lines should both be connected to BIX block pin 46. All the BIX block signals Gnd should be connected together.

SAB-400 and SAB-401 Station Audio Board

Card Cage: _____ Card Slot: _____

DB37 Pin Number	Signal	SAB Cable Wire Color Provo 12110 18 Pair	SAB Cable Wire Color Belden Standard 19 Pair	Terminal Block Pin Number	Station Name
1	Audio 1 +	Blue	Black	1	
20	Audio 1 -	White	Red	2	
	Gnd			3	Audio Shield 1
2	Audio 2 +	Orange	Black	4	
21	Audio 2 -	White	White	5	
	Gnd			6	Audio Shield 2
3	Audio 3 +	Green	Black	7	
22	Audio 3 -	White	Green	8	
	Gnd			9	Audio Shield 3
4	Audio 4 +	Brown	Black	10	
23	Audio 4 -	White	Blue	11	
	Gnd			12	Audio Shield 4
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	Gnd			15	Audio Shield 5
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	Gnd			18	Audio Shield 6
7	Audio 7 +	Orange	Black	19	
26	Audio 7 -	Red	Orange	20	
	Gnd			21	Audio Shield 7
8	Audio 8 +	Green	Red	22	
27	Audio 8 -	Red	White	23	
	Gnd			24	Audio Shield 8
9	Audio 9 +	Brown	Red	25	
28	Audio 9 -	Red	Green	26	
	Gnd			27	Audio Shield 9
10	Audio 10 +	Slate	Red	28	
29	Audio 10 -	Red	Blue	29	
	Gnd			30	Audio Shield 10
11	Audio 11 +	Blue	Red	31	
30	Audio 11 -	Black	Yellow	32	
	Gnd			33	Audio Shield 11
12	Audio 12 +	Orange	Red	34	
31	Audio 12 -	Black	Brown	35	
	Gnd			36	Audio Shield 12
13	Audio 13 +	Green	Red	37	
32	Audio 13 -	Black	Orange	38	
	Gnd			39	Audio Shield 13
14	Audio 14 +	Brown	Green	40	
33	Audio 14 -	Black	White	41	
	Gnd			42	Audio Shield 14
15	Audio 15 +	Slate	Green	43	
34	Audio 15 -	Black	Blue	44	
18	Gnd	* Green	* Green	45	Audio Shield 15
16	Audio 16 +	Blue	Green	46	
35	Audio 16 -	Yellow	Yellow	47	
37	Gnd	* Yellow	* Orange	48	Audio 16 Mic Shield
17	Master Audio Mic +	Orange	Green	49	
36	Master Audio Mic -	Yellow	Brown	50	

*Ground wire pair. All wiring is polarity sensitive. Pin 19 is also ground.