

76A ALL CALL/BACKGROUND MUSIC  
P/N 182779-101 and 102

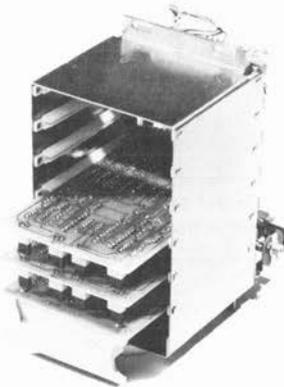


Fig. 1 - All Call/Background Music

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1.00 GENERAL

Scope

1.01 This publication covers identification and installation of the 76A All/Call Background Music (ACBM) Option. Hereafter this unit will be referred to as "All Call". All Call is designed to provide either of the following features: All Call with background music or All Call only, no background music.

Purpose and Function of AC/BM

1.02 The All Call/Background Music Option provides K76A Key Telephone Systems, equipped with K174A or K174B Call Announcers, with the capability of simultaneous access to all, or a predetermined group of Call Announcer stations for voice announcements or background music.

1.03 The Call Announcers connected to this equipment will normally remain in the receive-only mode and reproduce background music from an external source.

1.04 Provisions are made to individually remove the music from those stations that do not desire music. (Table C.)

1.05 Intercom calls to any individual station causes the music to that station only to be removed. The called station changes to a transmit-receive mode and normal call announcer operation ensues. When the call is terminated, the called station reverts to receive only and music is again delivered.

1.06 The all call mode of operation may be initiated by any intercom station dialing a preassigned All Call intercom number. This removes the music and substitutes the intercom link audio signal, thus enabling the calling party to be heard over all Call Announcers.

1.07 Stations individually programmed for "no background music" will receive the All Call announcements.

Equipment Covered

"All Call" Components

1.08 Card Rack and Cable Form Assembly - one card rack assembly is required per system to provide mounting for one master card and up to five extender cards. (Total of 44 stations.)

**TABLE A. IDENTIFICATION**

PART NO.	DESCRIPTION
182779 102 — 182761-101 182023-101 79400-102 182771-101 182754-101 KSP 76A-ACP-101	All Call/Background Music Assy. (4 Stations) <ul style="list-style-type: none"> <li>• All Call/Background Music Master Card (4 Stations)</li> <li>• Hex-Hd. Washer Screw</li> <li>• R. H. M. Screw</li> <li>• Cable Form</li> <li>• PC Card Rack Assy.</li> <li>• Key Systems Practice</li> </ul>
182765-101	All Call/Background Music Extender Card ( One required for each 8 stations or fraction)

1.09 All Call Master Card - Each system requires one master card which contains equipment necessary to switch between All Call or Music and an amplifier. This card also interfaces with four RT leads or provides for four All Call stations.

1.10 All Call/Background Music Extender Card - If more than four Call Announcer stations are needed it will be necessary to add one card for increments of eight stations, that is if one extender card is added to the Master Card a total of twelve Call Announcer stations will be available for use.

**Call Announcers**

1.11 All stations to receive All Call/Background Music must have a K174B Call Announcer for tone signaling. K174A Call Announcers may be used under limited conditions. (Paragraph 4.02.)

**External Power Supply**

1.12 When more than ten Call Announcers are used in a system it will be necessary for the customer to provide a power supply in addition to the one mounted with the Key Service Unit. (Paragraph 3.00.)

**External Music Source**

1.13 If background music is desired it will be necessary for the customer to provide an external music source such as an AM-FM tuner or tape deck.

**2.00 IDENTIFICATION**

2.01 A Card Rack and Cable Form Assembly is used to mount in or near the key service unit and must be interconnected to the KSU with cabling supplied by the customer. The card rack provides connector slots to expand from four to forty-four Call Announcer stations.

2.02 The All Call/Background Music Master Card is required in each system. It contains switching and an amplifier capable of driving up to fifty-four Call Announcers. This card also provides a reset signal and several bias voltages to other cards. Four Call Announcer stations are switched on this card.

2.03 Refer to fig. 3 which shows the location of music level control, All Call level control, and four music/no music option blocks on master card P/N 182761.

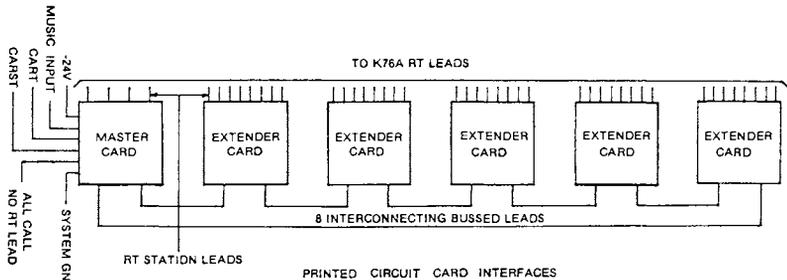


Fig. 2 - Printed Circuit Card Interfaces

**2.04** Each Extender Card contains eight individual latch/switch circuits to interface with eight RT leads which connect eight Call Announcer stations. See fig. 4 for location of music/no music option blocks.

**2.05** Each circuit has a CMOS integrated circuit analog switch to connect an RT lead to the common all call/music audio signal. This switch is controlled by a latch that is set by the negative going ramp on the RT lead and reset by the Call Announcer reset signal. If the music/no music option is set for music then this switch is normally **on**, and it turns **off** only when the connected RT lead is signaled. If the music/no music option is set for no music, then this switch is normally **off**, and turns on only when the all call digit is dialed.

**NOTE:** The 182765 All Call/Background music extender card must be used in conjunction with a 182761 all call/background music master card.

### 3.00 CUSTOMER PROVIDED EQUIPMENT

#### External Power Supply

**3.01** The K76A power supply will provide adequate current for simultaneous operation of up to 10 Call Announcers, in addition to its normal load. Since the All

Call/Background Music option requires simultaneous operation of many more stations (up to 54), an external DC power supply must be provided by the customer.

**3.02** This external power supply should be a well filtered ( $< 10$  mv. rms ripple), regulated unit that has an output of 24 VDC (-24V, +4V) under full load. The load current rating should be chosen on the basis of the maximum number of Call Announcers that will be connected. Each Call Announcer will require approximately 0.075 amps peak and 0.04 amps average. Thus a system with 54 Call Announcers installed will require an external 24 VDC power supply that will provide 2.2 amps ( $54 \times .04$ ) continuous and 4 amps on voice or music peaks. Likewise, a system with 16 Call Announcers connected to the All Call/Background Music option will require an external power supply that will provide 0.64 amps continuous and 1.2 amps ( $16 \times .075$ ) on voice/music peaks.

**3.03** A Dracon type 22718 KTS Power Supply is a good choice for systems with 54 Call Announcers. Hewlett Packard 60244B, 60245B and 60246B Modular power supplies may be used for systems with up to 14, 20 and 47 call announcers respectively. The Hewlett Packard 60204 power supplies may also be used.

#### External Music Source

**3.04** External Music Source in the form of a tape deck or an AM-FM radio tuner, with an auxiliary plug to plug into the 182779 card rack must be provided by the customer for background music.

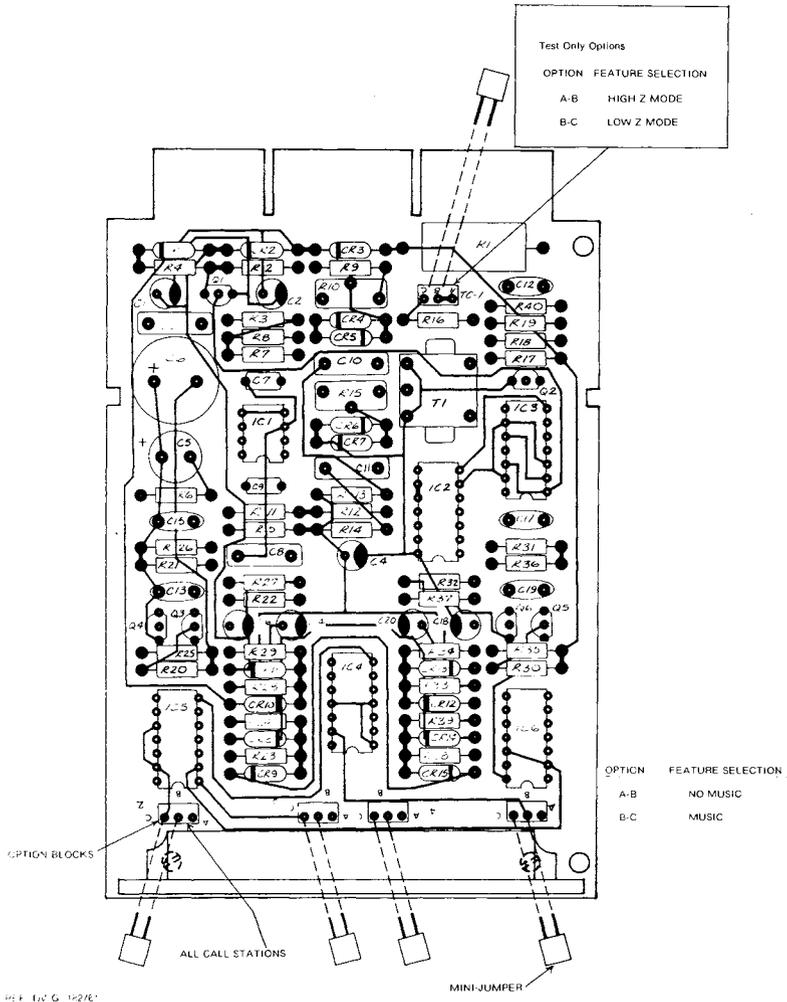
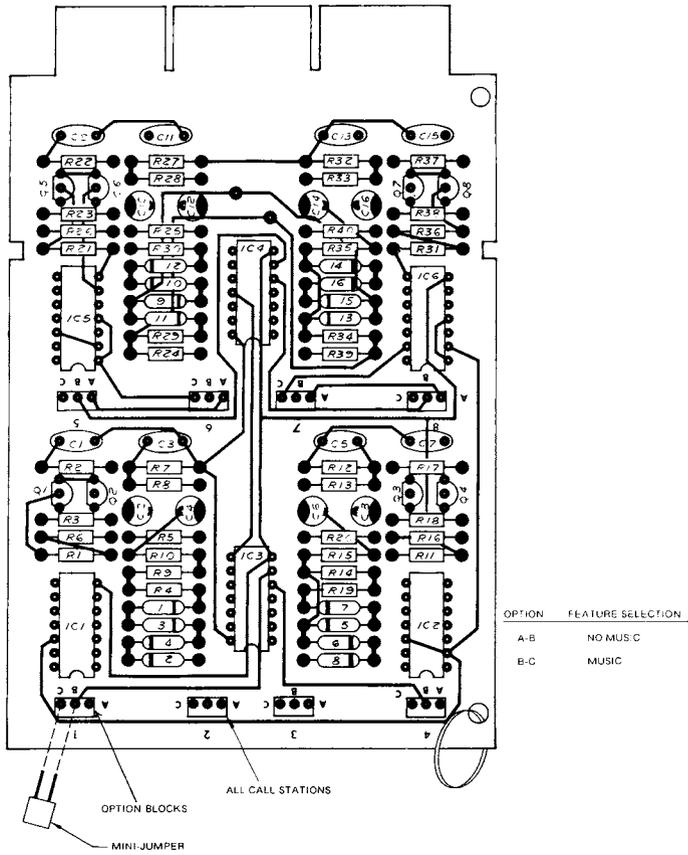


Fig. 3 - Location of Music Level Control, All Call Level Control, and Music/No Music Option Blocks



REF DWG 182765

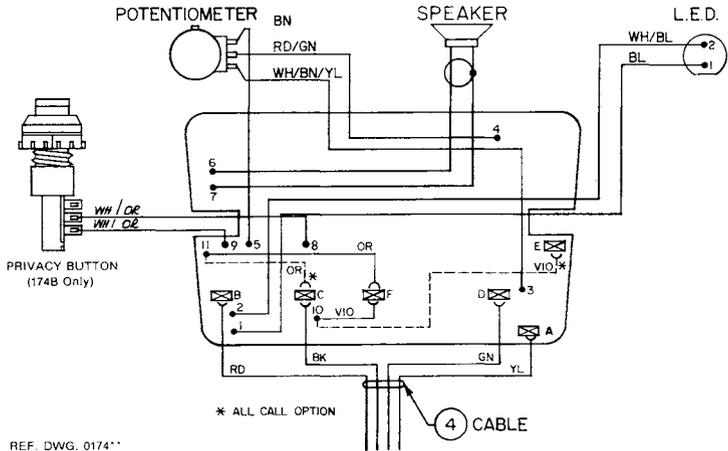
Fig. 4 - Location of Music/No Music Option Blocks On All Call/Background Music Extender Card.

**KSP 76A-ACP-101**

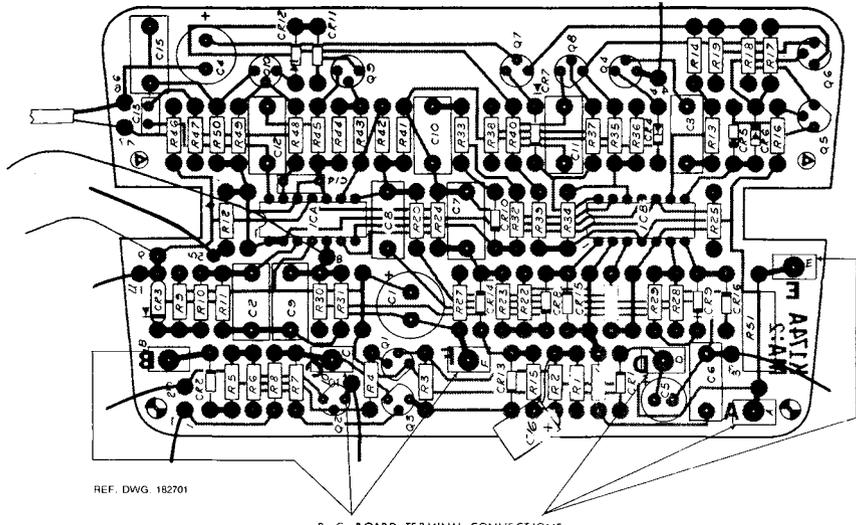
1 - 50-pin connector, (female)

2 - Stand-off Type Mounting Bracket for Card Rack Assy (needed for installation in K76A218 only)

1 - Hook-up wire



REF. DWG. 0174\*\*



REF. DWG. 182701

**Fig. 5 - K174B Call Announcer Printed Circuit Board with All Call Option 182701 PCB**

#### 4.00 CALL ANNOUNCERS

4.01 The All Call/Background Music Option for the K76A is designed to work with the new K174A or B Call Announcer with 182701 PCB. This Call Announcer includes strap options that convert the circuitry to complement the All Call/Background Music Option as follows: (1) Call Announcer remains powered continuously, (2) Call Announcer normally remains locked in receive only (for music) and switches to a two-way mode in response to a normal RT lead negative ramp, (3) the Call Announcer LED lights only when a normal call is made to that station (LED remains off for music or All Call). See Fig. 5.

4.02 Earlier Call Announcers, (date stamped 2-77 or earlier), are not designed for use with AC/BM although such operation is possible within the following constraints.

A. For K174A Call Announcers, date stamped 2-77 or earlier.

(1) Background music cannot be satisfactorily provided by the All Call/Background Music Option.

(2) For All Call, the Call Announcers trigger ON from transients or beep tone. Thus, Call Announcer turn on for All Call is dependent on the all call volume control setting. Option strap on the All Call Background Music card should be configured for No Music. See Fig. 2

B. For K174B Call Announcers with / 182540 PCB

(1) Disconnect, tape and store the red (CARST) leads from each Call Announcer. (This causes the Call Announcer to remain powered after the first trigger. However, this also causes the Call Announcer LED to always remain ON, thus limiting its usefulness as a call indicator). Each station should be called in turn immediately after powering up the K76A, (or after

any power outage), to turn on each Call Announcer.

(2) Customer is instructed to leave the Call Announcer in the private mode except when to receive a call, as indicated by a beep. Customer must depress the privacy switch to answer a call. The privacy switch locks the Call Announcer into receive only, thus enabling it to reproduce music without annoying return to transmit during quiet passages.

#### 5.00 INSTALLATION FOR K76A218, K76A336, AND K76A454 KEY SYSTEMS

5.01 Equipment required to install eighteen, thirty-six, or forty-four All Call/Background Music stations. P/N 182779-102 assembly provides four All Call stations.

##### 18-Station All Call

1 - 182779-102 AC/BM Assembly  
2 - 182765-101 Extender Card

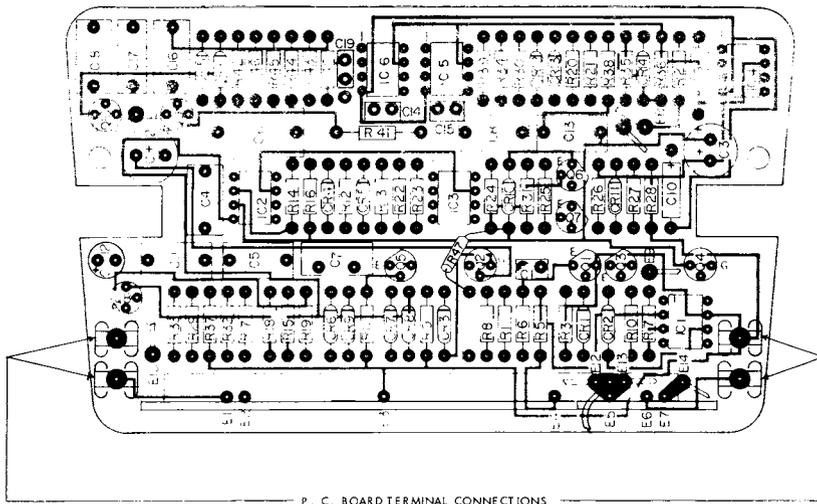
##### 36-Station All Call

1 - 182779-102 AC/BM Assembly  
4 - 182765-101 Extender Card

##### 44-Station All Call

1 - 182779-102 AC/BM Assembly  
5 - 182765-101 Extender Card

**NOTE: Refer to 3.00 for customer provided equipment.**



REF. DWG. 182540

**Fig. 6 - K174A and K174B Call Announcer Printed Circuit Board without All Call Option Showing Terminal Connections (PCB 182540)**

**Procedure**

**CAUTION: DISCONNECT POWER TO KSU**

5.02 Mount the card rack to suitable surface near the KSU and main distribution frame (MDF). Customer must provide a suitable stand-off bracket to hold card rack from the wall. See fig. 8.

5.03 For a 76A336 and a 76A454 Key Service Unit, mount the card rack assembly in the optional chassis space provided in the KSU or mount as instructed for 76A218 KSU.

5.04 Select hook-up wire of proper length to make connections between the 182779-102 connectors and the appropriate terminal blocks on the MDF.

5.05 Assemble one end of hook-up wires to a 50-pin connector and terminate the other end of hook-up wires on terminal blocks as shown in Table B for the 76A218 Key Service Unit.

5.06 Mount the external power supply as close as possible to the KSU to minimize wire length.

5.07 Remove the fuse from the -24VT output of the KSU power supply. This output of the KSU power supply will be used only as a terminal point.

**CAUTION: DO NOT REPLACE THIS FUSE.**

5.08 Connect the positive (+) output of the external power supply to the GND terminal of the KSU power supply. Use # 22 ga. wire or larger.

5.09 Connect the negative (-) output of the external power supply to the -24VT terminal on the KSU power supply. Use #22 ga. wire or larger.

5.10 Connect an external music source to the music input plug (J7A) on the 182779-102 card rack assembly.

## TABLE B. CONNECTIONS FOR ALL CALL/BACKGROUND MUSIC IN K76A KEY SYSTEMS

All Call/Music Interconnect Cable Connections to K76A218, K76A336, and K76A454

INTERCONNECT CABLE END				INTERCONNECT PLUG		
Punch Down on KSU Blocks				Plug into All Call/Music		
K76A218	K76A336	K76A454	Designation	Color	Terminal	Plug
	TBC-19	TBD-17	RT-32	W-BL	26	
TBC-50	TBD-47	TBF-41	GND	BL-W	1	
	TBC-20	TBD-18	RT-33	W-O	27	
TBB-1		TBD-41	*RT-3/56	O-W	2	
	TBC-21	TBD-19	RT-34	W-G	28	
TBB-2		TBD-42	*RT-4/57	G-W	3	
	TBC-22	TBD-20	RT-35	W-BR	29	
TBC-38	TBD-14	TBF-26	CART	BR-W	4	
	TBC-23	TBD-21	RT-36	W-SL	30	
TBB-45	TBD-17	TBF-39	CARST	SL-W	5	
	TBC-24	TBD-22	RT-37	R-BL	31	
TBB-3	TBC-1	TBD-43	*RT-5/58	BL-R	6	
	TBC-25	TBD-23	RT-38	R-O	32	
TBB-4	TBC-2	TBD-44	*RT-6/59	O-R	7	
	TBC-26	TBD-24	RT-39	R-G	33	
			**All/Call	G-R	8	
	TBC-27	TBD-25	RT-40	R-BR	34	
				BR-R	9	
	TBC-28	TBD-26	RT-41	R-SL	35	
TBB-5	TBC-3	TBD-1	RT-7	SL-R	10	
	TBC-29	TBD-27	RT-42	BK-BL	36	
TBB-6	TBC-4	TBD-2	RT-8	BL-BK	11	
	TBC-30	TBD-28	RT-43	BK-O	37	
TBB-7	TBC-5	TBD-3	RT-9	O-BK	12	P1A
	TBC-31	TBD-29	RT-44	BK-G	38	
TBB-8	TBC-6	TBD-4	RT-0	G-BK	13	
	TBC-32	TBD-30	RT-45	BK-BR	39	
TBB-9	TBC-8	TBD-6	RT-21	BR-BK	14	
	TBC-33	TBD-31	RT-46	BK-SL	40	
TBB-10	TBC-9	TBD-7	RT-22	SL-BK	15	
	TBC-34	TBD-32	RT-47	Y-BL	41	
TBB-11	TBC-10	TBD-8	RT-23	BL-Y	16	
	TBC-35	TBD-33	RT-48	Y-O	42	
TBB-12	TBC-11	TBD-9	RT-24	O-Y	17	
	TBC-36	TBD-34	RT-49	Y-G	43	
TBB-13	TBC-12	TBD-10	RT-25	G-Y	18	
		TBD-35	RT-50	Y-BR	44	
TBB-14	TBC-13	TBD-11	RT-26	BR-Y	19	
		TBD-36	RT-51	Y-SL	45	
TBB-15	TBC-14	TBD-12	RT-27	SL-Y	20	
		TBD-37	RT-52	V-BL	46	
TBB-16	TBC-15	TBD-13	RT-28	BL-V	21	
		TBD-38	RT-53	V-O	47	
TBB-17	TBC-16	TBD-14	RT-29	O-V	22	
		TBD-39	RT-54	V-G	48	
TBB-18	TBC-7	TBD-5	RT-20	G-V	23	
		TBD-40	RT-55	V-BR	49	
	TBC-17	TBD-15	RT-30	BR-V	24	
TBC-29	TBD-6	TBF-40	-24 VT	V-SL	50	
	TBC-18	TBD-16	RT-31	SL-V	25	

\*\* It is the option of the installer to choose any unused RT number to ring up the All Call feature.

\* RT3, 4, 5, and 6 will appear as a lead designation in systems K76A218 and K76A336 only. RT 56, 57, 58 and 59 will appear as a lead designation in system K76A454 only.

- 5.11 Change wiring option on all Call Announcer P. C. boards to All Call option. See fig. 5.
- 5.12 Set All Call level control and music level control to mid-range.
- 5.13 Select music or no music for each station. Table C can be used to correlate the music/no music option blocks on each card to an RT lead. Cards are shipped in the music option position.
- 5.14 Plug all printed circuit cards into proper connector. Restore power to KSU and test system for proper operation.

**6.00 ACBM INTERCONNECTIONS AND SCHEMATICS**

- 6.01 Figure 9 and 10 illustrate the All Call/Background Music internal connections.
- 6.02 Figures 11 and 12 illustrate the circuit configuration for the master card and extender cards used in ACBM.

**NOTE: If K174B Call Announcers dated prior to 3-77 are used for All Call, each Call Announcer should be called up immediately after powering up KSU to turn ON each Call Announcer.**

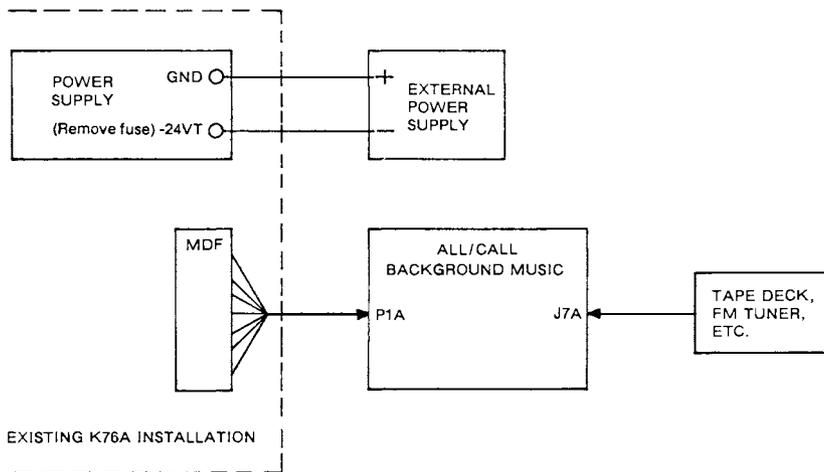


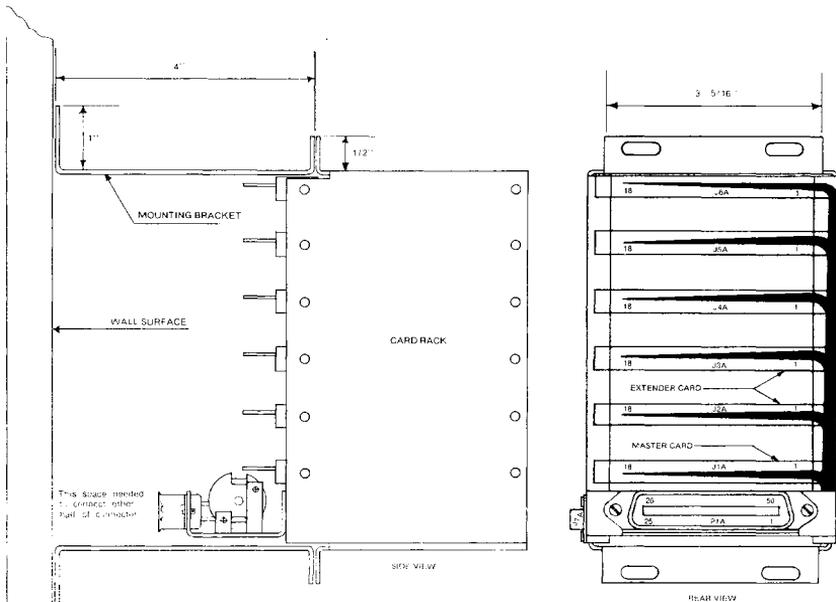
Fig. 7 - Typical System Interconnections

**TABLE C. NO MUSIC OPTION**

To disable music at any Call Announcer, move the associated mini-jumper to option A-B.

CA Station	Option Block	Interconnection	Card Location	
RT - *3/56	TC2	J1A - 2	J1A	
	*4/57	TC3		4
	*5/58	TC4		10
	*6/59	TC5		11
7	TC1	J2A - 2	J2A	
8	TC5			4
9	TC6			5
0	TC2			6
21	TC7	11	J2A	
22	TC3	13		
23	TC8	14		
24	TC4	15		
25	TC1	J3A - 2	J3A	
26	TC5			4
27	TC6			5
28	TC2			6
29	TC7	11	J3A	
20	TC3	13		
30	TC8	14		
31	TC4	15		
32	TC1	J4A - 2	J4A	
33	TC5			4
34	TC6			5
35	TC2			6
36	TC7	11	J4A	
37	TC3	13		
38	TC8	14		
39	TC4	15		
40	TC1	J5A - 2	J5A	
41	TC5			4
42	TC6			5
43	TC2			6
44	TC7	11	J5A	
45	TC3	13		
46	TC8	14		
47	TC4	15		
48	TC1	J6A - 2	J6A	
49	TC5			4
50	TC6			5
51	TC2			6
52	TC7	11	J6A	
53	TC3	13		
54	TC8	14		
RT- 55	TC4	15		

\* RT3, 4, 5, and 6 will appear as lead designation in system K76A218 and K76A336 only. RT 56, 57, 58, and 59 will appear as lead designations in system K76A454 only.



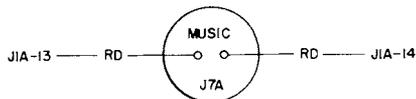
**NOTE:** Customer must furnish mounting bracket and necessary screws. Bracket not required when card rack is mounted on KSU mounting frame.

**Fig. 8 - Card Rack Assembly Mounting For 76A218 Key Service Unit**

J1A			J2A			J3A			J4A			J5A			J6A				
TERMINAL	DESIGNATION	NUMBER	TERMINAL	DESIGNATION	NUMBER	TERMINAL	DESIGNATION	NUMBER	TERMINAL	DESIGNATION	NUMBER	TERMINAL	DESIGNATION	NUMBER	TERMINAL	DESIGNATION	NUMBER		
1	GND	1	1	BL-WH — PIA-1	1	1	GND	1	1	WH-BL — PIA-26	1	1	GND	1	1	RD-BN — PIA-34	1	1	YL-OR — PIA-42
2	RT-3	2	2	OR-WH — PIA-2	2	2	SL-RD — PIA-10	2	2	GN-YL — PIA-18	2	2	RT-32	2	2	RD-BN — PIA-34	2	2	YL-OR — PIA-42
3	-3.6V	3	3	RT-7	3	3	-3.6V	3	3	RT-25	3	3	-3.6V	3	3	-3.6V	3	3	YL-OR — PIA-42
4	RT-4	4	4	GN-WH — PIA-3	4	4	BL-BK — PIA-11	4	4	BN-YL — PIA-19	4	4	RT-33	4	4	RD-SL — PIA-35	4	4	YL-GN — PIA-43
5	CART	5	5	BN-WH — PIA-4	5	5	OR-BK — PIA-2	5	5	SL-YL — PIA-20	5	5	RT-34	5	5	BK-BL — PIA-36	5	5	YL-GN — PIA-43
6	CART	6	6	SL-WH — PIA-5	6	6	GN-BK — PIA-13	6	6	BL-VO — PIA-21	6	6	RT-35	6	6	BK-OR — PIA-37	6	6	YL-BN — PIA-44
7	-9.2V	7	7	RT-8	7	7	RT-26	7	7	RT-27	7	7	-9.2V	7	7	BK-OR — PIA-37	7	7	YL-SL — PIA-45
8	AUDIO	8	8	RT-9	8	8	RT-27	8	8	RT-28	8	8	AUDIO	8	8	AUDIO	8	8	YL-SL — PIA-45
9	BIAS	9	9	RT-10	9	9	AUDIO	9	9	RT-29	9	9	BIAS	9	9	BIAS	9	9	YL-SL — PIA-45
10	RT-5	10	10	BL-RD — PIA-6	10	10	BIAS	10	10	RT-30	10	10	BIAS	10	10	BIAS	10	10	YL-SL — PIA-45
11	RT-6	11	11	OR-RD — PIA-7	11	11	BN-BK — PIA-4	11	11	OR-VO — PIA-22	11	11	RT-36	11	11	BK-GN — PIA-38	11	11	VO-BL — PIA-46
12	-12.8V	12	12	RT-21	12	12	RT-29	12	12	RT-31	12	12	-12.8V	12	12	RT-44	12	12	VO-BL — PIA-46
13	MUSIC	13	13	RD — J7A	13	13	SL-BK — PIA-15	13	13	GN-VO — PIA-23	13	13	RT-37	13	13	RT-45	13	13	VO-OR — PIA-47
14	MUSIC	14	14	RD — J7A	14	14	BL-YL — PIA-16	14	14	BN-VO — PIA-24	14	14	RT-38	14	14	RT-46	14	14	VO-OR — PIA-47
15	ALL CALL	15	15	GN-RD — PIA-8	15	15	OR-YL — PIA-17	15	15	SL-VO — PIA-25	15	15	RT-39	15	15	RT-47	15	15	VO-GN — PIA-48
16	CART	16	16	RT-16	16	16	CART	16	16	CART	16	16	CART	16	16	YL-BL — PIA-41	16	16	VO-BN — PIA-49
17	NO MUSIC	17	17	NO MUSIC	17	17	NO MUSIC	17	17	NO MUSIC	17	17	NO MUSIC	17	17	NO MUSIC	17	17	VO-BN — PIA-49
18	-24V1	18	18	VO-SL — PIA-50	18	18	NO MUSIC	18	18	NO MUSIC	18	18	NO MUSIC	18	18	NO MUSIC	18	18	VO-BN — PIA-49
DESIGNATION			DESIGNATION			DESIGNATION			DESIGNATION			DESIGNATION			DESIGNATION			DESIGNATION	

Fig. 9 - Internal Connections J1A thru J6A

REF. FIG. 100-9



JIA-1	BL-WH	1	GND	RT-32	26	WH-BL	J4A-2	
JIA-2	OR-WH	2	RT-3	RT-33	27	WH-OR	J4A-4	
JIA-4	GN-WH	3	RT-4	RT-34	28	WH-GN	J4A-5	
JIA-5	BN-WH	4	CART	RT-35	29	WH-BN	J4A-6	
JIA-6	SL-WH	5	CARST	RT-36	30	WH-SL	J4A-11	
JIA-10	BL-RD	6	RT-5	RT-37	31	RD-BL	J4A-13	
JIA-11	OR-RD	7	RT-6	RT-38	32	RD-OR	J4A-14	
JIA-15	GN-RD	8	ALL CALL	RT-39	33	RD-GN	J4A-15	
		9		RT-40	34	RD-BN	J5A-2	
J2A-2	SL-RD	10	RT-7	RT-41	35	RD-SL	J5A-4	
J2A-4	BL-BK	11	RT-8	RT-42	36	BK-BL	J5A-5	
J2A-5	OR-BK	12	RT-9	RT-43	37	BK-OR	J5A-6	
J2A-6	GN-BK	13	RT-0	RT-44	38	BK-GN	J5A-11	
J2A-11	BN-BK	14	RT-21	RT-45	39	BK-BN	J5A-13	
J2A-13	SL-BK	15	RT-22	RT-46	40	BK-SL	J5A-14	
J2A-14	BL-YL	16	RT-23	RT-47	41	YL-BL	J5A-15	
J2A-15	OR-YL	17	RT-24	RT-48	42	YL-OR	J6A-2	
J3A-2	GN-YL	18	RT-25	RT-49	43	YL-GN	J6A-4	
J3A-4	BN-YL	19	RT-26	RT-50	44	YL-BN	J6A-5	
J3A-5	SL-YL	20	RT-27	RT-51	45	YL-SL	J6A-6	
J3A-6	BL-VO	21	RT-28	RT-52	46	VO-BL	J6A-11	
J3A-11	OR-VO	22	RT-29	RT-53	47	VO-OR	J6A-13	
J3A-13	GN-VO	23	RT-20	RT-54	48	VO-GN	J6A-14	
J3A-14	BN-VO	24	RT-30	RT-55	49	VO-BN	J6A-15	
J3A-15	SL-VO	25	RT-31	-24VT	50	VO-SL	J1A-18	
			TERMINAL	DESIGNATION	DESIGNATION	TERMINAL		
			PIA					

REF ID: A6162986

Fig. 10 - Internal Connections P1A and J7A

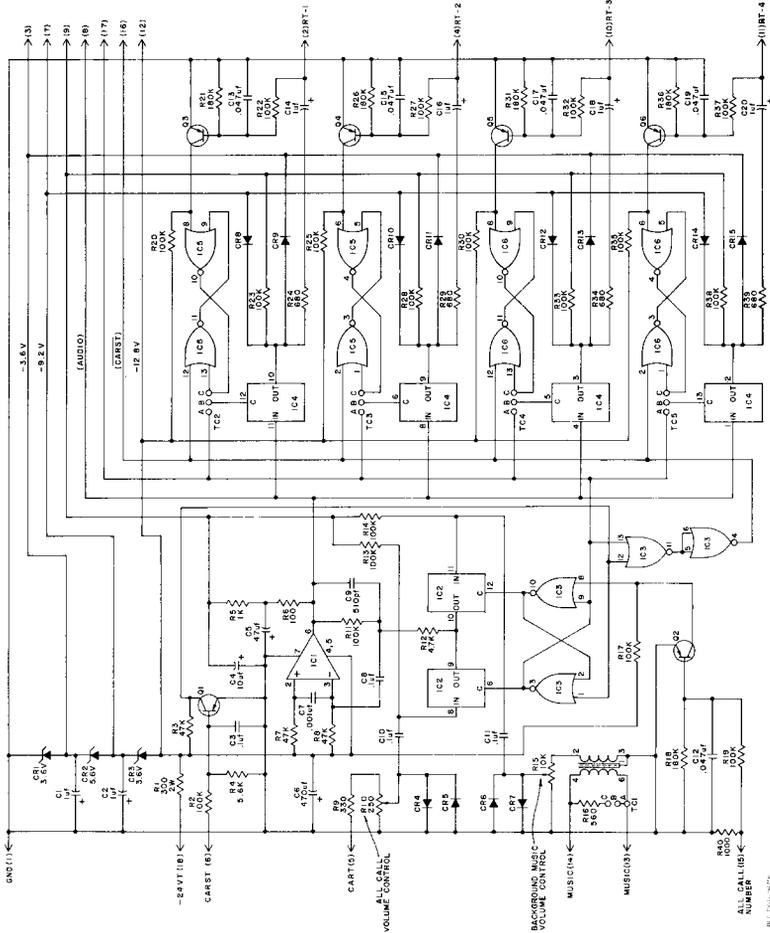


Fig. 11 - AC/BM Master Card Schematic

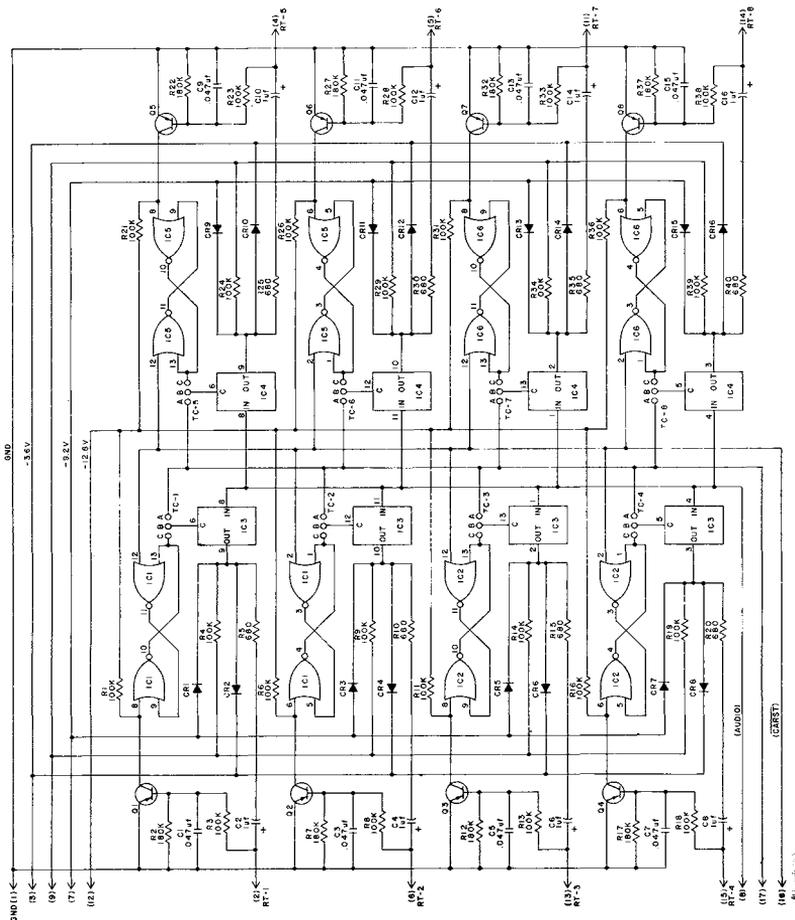


Fig. 12 - AC/BM Extender Card Schematic