

K401-CAP PAGING ADAPTER AND CALL ANNOUNCING KEY TELEPHONE UNIT

1.00 INTRODUCTION

Scope

1.01 This publication covers Identification, Installation, and Operation of the K401-CAP Key Telephone Unit.

1.02 This issue is revised to add connections for telephones with built-in call announcer (Table D and Figure 2).

Identification

1.03 The K401-CAP Key Telephone Unit (KTU) is a plug-in unit designed for use in a K1A2 Key Telephone System (KTS) utilizing Rotary or Tel-Touch Dial Intercom. It will provide access to a paging amplifier or to a Call Announcer from intercom stations. The circuit is accessed by dialing an assigned intercom number. The K401-CAP is not intended for use with the K36A or K76A Key Telephone systems.

1.04 The K401-CAP circuit is designed to include the following characteristics:

- (1) Two optional ring-up voltages of 110V ac or 10-18V ac.
- (2) Warning tone when using Call Announcing option (factory strapped, Option A).
- (3) Music cut-off during paging, (Pin 9 to Pin 14.)

- (4) Spare contacts, (normally open or normally closed), for control of an external circuit. (Paging Adapter application only.)

2.00 INSTALLATION

General

2.01 The K401-CAP KTU may be inserted into any vacant CO/PBX line card connector and may be assigned any available intercom station number. A card mounting panel, such as a K259B 2-card panel or a K359A 1-card panel may be used and wired according to Table C or Table D.

2.02 The K401-CAP KTU requires -24V dc (A Battery) at pin 18.

NOTE: The CO/PBX Line Card connectors of the following listed units are wired for Music-on-Hold application, and Pin 18 of each connector is brought out on an individual lead; -24V dc must be connected to this lead of the connector occupied by the K401-CAP KTU.

K501A Key Service Unit
K512A Key Service Unit
K584C 13-Card Panel
K584C1 13-Card Panel with Inter-ruptr

Table A.—Option Strapping

Feature	Option	Terminals	Pins
Tone for Call Announcing	A	E-F	14
No Tone for Call Announcing	B	D-E	
-24V dc for Call Announcing	C	T-U X-Y	8
Contact Closure	D	U-V X-Y	4-8*
Contact Open	E	U-V Y-Z	4-8*
Ring-up, 110V ac	F	A-B	1-15
Ring-up, 10-18V ac	G	B-C	1-15
Call Announcer Reset	H	G-H	9

*NOTE: Pin 4 in all key systems is wired to 10 V ac. If this option is used Pin 4 will require rewiring.

2.03 The K401-CAP can be strapped to provide: -24V dc to pin 8 for Call Announcing; or a normally-closed or normally-open set of contacts via Pin 4 to 8 in paging application.

2.04 After the K401-CAP has been operated, a ground on the station A Lead Reset will have to be returned to pin 9 of the K401-CAP. This will reset the Call Announcer and K401-CAP. See figure 3 for proper connections.

Connections, Paging Adapter Application

2.05 Connections for voice paging are shown in Table C. RT input, Pin 1, must be connected to the RT terminal (intercom number) assigned to the paging feature.

Connections, Call Announcing Application

2.06 Connections for Call Announcing are shown in Table D.

Table B.—Strapping

Ring-up Voltage	110V ac (Ringer) 10-18V ac (Buzzer) A-B (Factory Strapped) B-C
Call Announcing	E-F, T-U, X-Y (Factory strapping) G-H Factory strapping. Remove for Paging
Voice Paging	Remove strap E-F if warning tone is not desired.

Table C.—Voice Paging Connections

401-CAP Pin No.	Designation	207C	307A			357A		
			307A Lead	501A	512A	357A Terminal	501A	512A
1	RT Digit	A *	BK-GN to V-O	B *	E *	B *	B *	E *
9	Music Source***							
12	T	1B	W-BL	A39	E1	A1	A39	E1
13	R	2B	BL-W	A40	E2	A2	A40	E2
14	PA Amplifier Input							
15	BG	20B	O-W	C43	E7	A10	C43	E7
16	A	35B	(307A GN-V)			(357A A4)		
18	AB	9B	W-O	C44	TB1-3**	A9	C44	TB1-3*

*RT terminal assigned to paging

**Power Supply

***G-H Option should not be strapped for paging option.

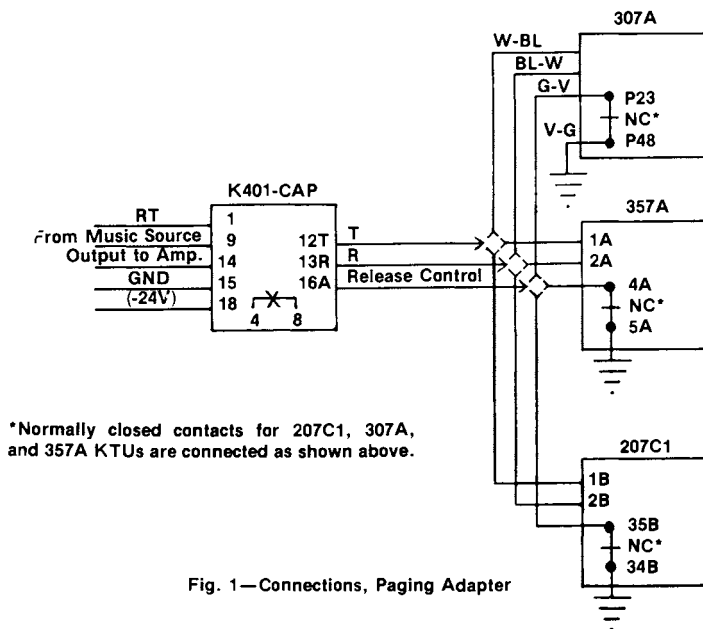
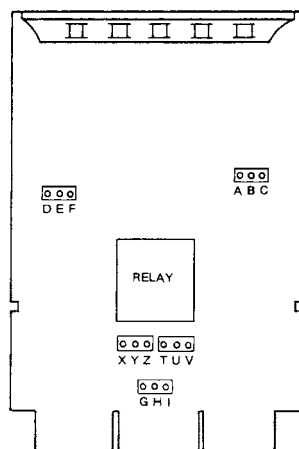
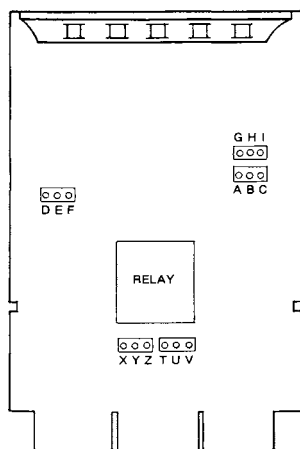


Fig. 1—Connections, Paging Adapter



NOTE: Determine which K401-CAP card you have for location of "G-H-I" Option.

Fig. 1A—Location of Option Blocks

Table D.—Connections for Call Announcing

401-CAP Pin No.	Designation	207C	307A			357A			CA Lead	10/20 Telephone W/CA
			307A Lead	501A	512A	357A Terminal	512A	501A		
1	RT Digit from ICM	A*	BK-GN to V-O	B *	E *	B *	B *	E *	BK	OR-YL
8	-24V (Out)									
9	A Lead Reset***									
12	T (In)	1B	W-BL	A39	E1	A1	A39	E1	GN YEL	VI-GN
13	R(In)	2B	BL-W	A40	E2	A2	A40	E2		YL-OR
14	T (Out)									
15	BG	20B	O-W	C43	E7	A10	C43	E7		
16	A	35B	307A GN-V			357A A4				
18	AB	9B	W-O	C44	TB1-3**	A9	C44	TB1-3**		

RT terminal assigned to Call Announcer
Station

**Power Supply

***Pin 9 connects to A Lead of the Telephone
to provide reset feature for Call Announcing

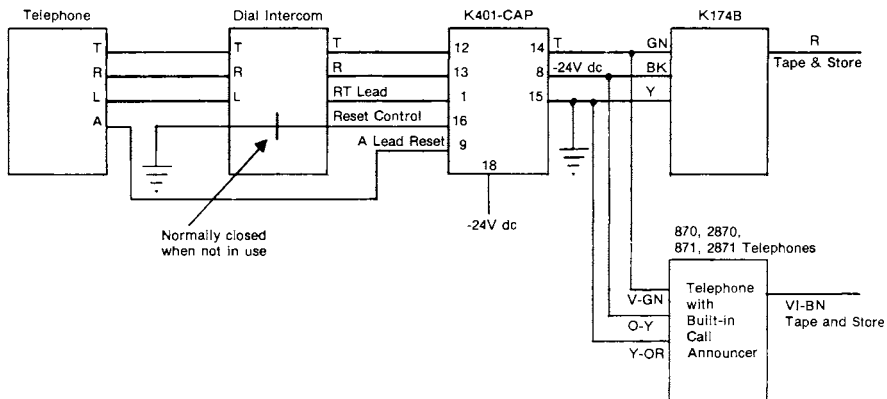


Fig. 2—Connections, Call Announcing

3.00 OPERATION

Paging Adapter

3.01 The paging system is operated via an intercom station by pressing the intercom station set, going off-hook and dialing an assigned number. Voice paging can then be accomplished via the intercom system and the K401-CAP KTU. When the calling station goes on-hook after paging, the circuit reverts to the idle state.

NOTE: The K401-CAP KTU provides music cut-off when used as a paging adapter. (Pins 9 and 14.)

Call Announcer

3.02 When providing the Call Announcing feature, one K401-CAP and one K174B Call Announcer are required for each station that is to be signaled in this manner.

3.03 If a user wishes to answer a call with the handset instead of the Call Announcer, the A Lead Reset from the station must be returned to Pin 9 of the K401-CAP, (G-H option). This ground will cause the Call Announcer and K401-CAP to return to idle.

NOTE: Option G-H is factory strapped to provide reset feature for Call Announcers. Remove G-H strapping if Paging is desired.

Circuit Operation (Idle)

3.04 In idle condition, the only current being drawn by the circuit is through R9 to the 5.6V zener diode CR6 supplying voltage to U1 and U2. Q1, R relay and U3 are all idle.

Circuit Operation (Ring-up)

3.05 Ring current enters the K401-CAP through Pin 1 and flows through diode bridge CR7, 8, 9, 10 causing U3 to conduct. This allows current to flow through CR1, R8, CR4, CR5, thus providing base current to turn on transistor Q1 which pulls in R relay. R relay will stay energized by its own contact R3 when energized. When the R relay energizes, the R6 "make contact" closes providing a voltage pulse at Pin 2 of U1. The output of U1, Pin 3, triggers U2 into oscillation. The tone generated by U2 is coupled through C1 through the E-F option out to the Call Announcer when it is used for this option.

NOTE: The E-F Option is not normally used for paging.

3.06 The R relay also completes the audio path for proper circuit operation. The operation of U1 and U2, due to circuit configuration, generates a short tone burst of approximately 600 ms. at pin 14.

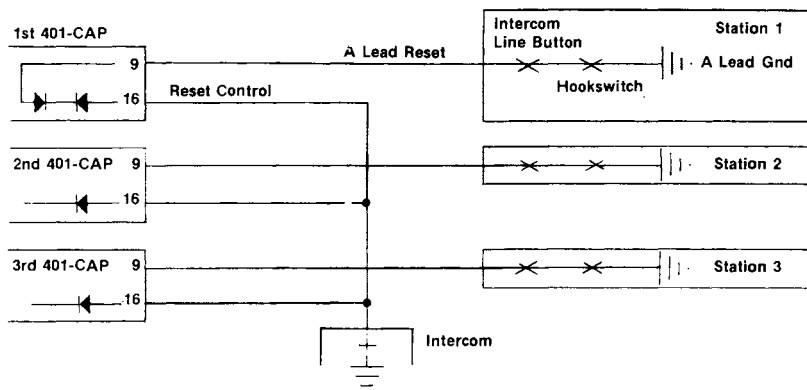


Fig. 3—Diagram for A Lead Reset

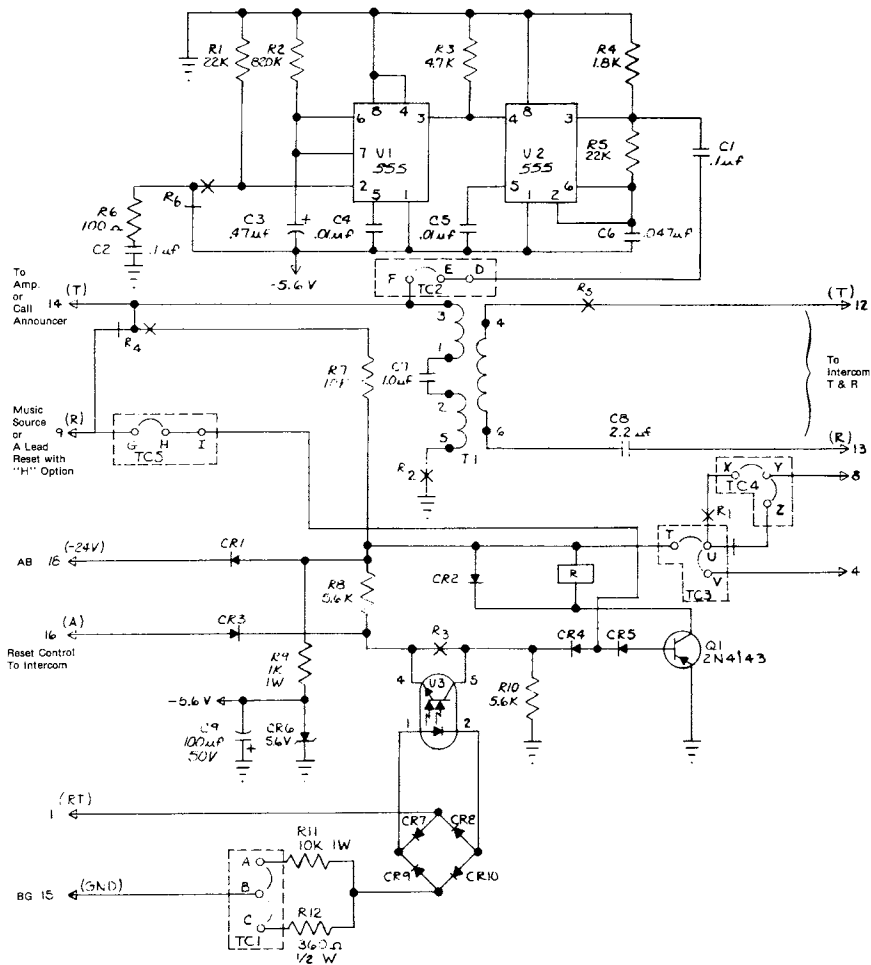


Fig. 4—Circuit Diagram, K401-CAP (183445)

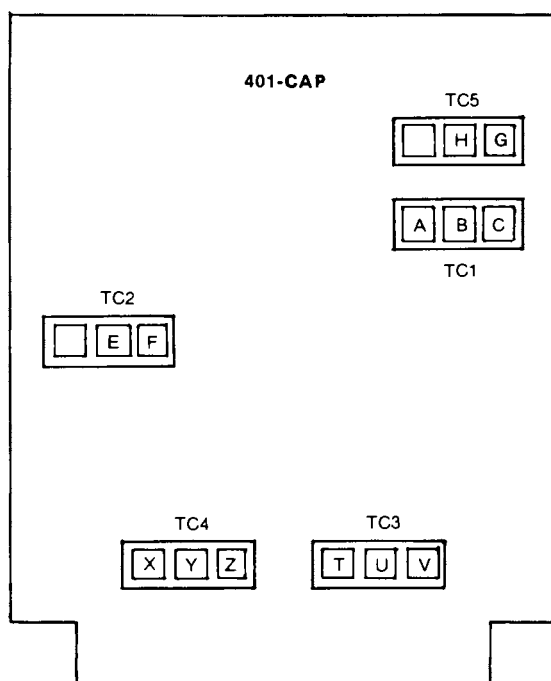


Fig. 5 - Location of Option Blocks on 401-CAP KTU

ITT Telecommunications Corporation
APPARATUS DIVISION, Corinth, MS 38834 — (601) 287-3771

