

**K-357A KEY TELEPHONE UNIT
9-STATION ROTARY AND PUSHBUTTON
DIAL SELECTIVE INTERCOM CIRCUIT**

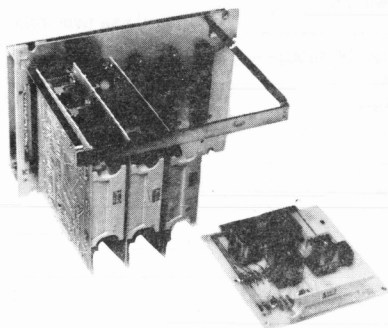


Fig. 1 - K 357A KTU with Basic Circuit Cards and Expansion KTU.

1.00 SCOPE

1.01 This Key System Practice (KSP) covers identification, installation and circuit diagrams for the K357A Key Telephone Unit (KTU).

1.02 This KSP is reissued to revise mounting instructions (paragraph 3.02) and notes on Table B.

2.00 IDENTIFICATION

2.01 The KTU can be identified by a code number (K357A) stamped on the mounting panel. Approximate dimensions of the K357A are 9 1/4" W x 7" H x 8 1/2" D.

2.02 The basic 9-station KTU consists of a mounting panel, three plug-in printed circuit cards (K160C, K166A, and K166B) and a card retaining bracket with associated hardware.

NOTE: The unit can be built up by ordering only components desired. (See Table A.)

PURPOSE OF EQUIPMENT

2.03 The K357A KTU is designed for use in a K501 or K512 Key Telephone System (KTS) to

provide pushbutton and rotary dial selective intercom. It provides a single common talking path and single spurt selective signaling for nine stations, but can be expanded to 18, 27, or 36 station capacity by the addition of one K160B KTU for each additional nine stations. Slots are provided to accept the additional KTU's, but additional connecting points (66-type connecting block), will be required if more than 18 stations are connected.

DESCRIPTION OF COMPONENTS

2.04 K160C, Dial Intercom Card. One is used per system to permit dial selection of nine signal paths. (This KSU is a modified version of the K160A KTU as used in the 76A Key Telephone System.) Dimensions in inches are approximately 5 3/8" W x 5 5/8" L x 1 1/4" D. (22 dual dual contacts.) See fig. 4.

2.05 K166A, Pushbutton (Tone) Dial Detector Card. One is used per system in conjunction with a K166B Translator Card to adapt the intercom system to accommodate pushbutton dialing. Approximate dimensions in inches are 5 3/8" W x 5 5/8" L x 1 1/4" D. (22 dual contacts.) Refer to fig. 5.

2.06 K166B Pushbutton (Tone) Dial Translator Card. One is used per system in conjunction with a K166A Detector Card to adapt intercom system to accommodate pushbutton dialing. Approximate dimensions in inches are 5 3/8" W x 5 5/8" L x 1 1/4" D. (22 dual contacts.) See fig. 6.

2.07 K160B, Dial Intercom KTU. One KTU is used for each additional nine dial codes. K160B KTUs are not furnished with the basic K357A unit but can be purchased separately to expand to 18, 27, or 36 intercom stations as required. See fig. 7.

3.00 INSTALLATION

3.01 The K357A is designed to mount on the hinged frame of a K501 or K512 Key Service Unit (KSU). See fig. 2.

TABLE A. IDENTIFICATION

Number	Description
000357-00A-963	KTU, 9-Station Dial Intercom Circuit (Includes one each of the following fo
182723-101	*Panel, Card Mounting
182713-101	*CARD, Dial Intercom, 9-Station (K-160C)
182516-101	*CARD, T-T Detector. (K166A)
182520-101	*CARD, T-T Translator. (K166B)
182481-101	KTU, Dial Intercom Expansion. (To add 9 dial codes,) (K160B.)
183035-101	Interconnect Cable For K-501A (9 or 18 Stations)
183046-101	Interconnect Cable For K-512A (9 or 18 Stations)
KSP 357-00A	Key System Practice

Order these two units
only for 9-station
rotary intercom.

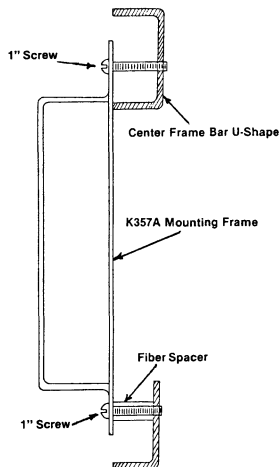


Figure 2. Mounting of K357A Frame in New K512 Systems

CAUTION: Turn off all power before making any connections or plugging in any KTU.

MOUNTING THE K357A PANEL

3.02 The method of mounting the K357A will vary with the cabinet it is being installed in, as follows:

- (1) **Current 501A Key Service Units.** Use the four 3/8-inch screws provided and mount the K357A Panel on the front of the equipment frame.
- (2) **Current 512A Key Service Units.** Use two of the fiber spacers and the four long (1 1/4-inch) screws provided and mount the K357A Panel behind the equipment frame as shown in figure 2.
- (3) **Old 501 Floorstand Key Service Units.** Use the four 3/8-inch screws provided and mount the K357A Panel behind the equipment frame.
- (4) **Old 501 and 512 Wall Key Service Units.** Use the four fiber spacers and four long (1 1/4-inch) screws provided and mount the K357A Panel behind the equipment frame.

NOTE: In some cases a K512 KSU may not permit use of the supplied fiber spacers because of interference with the "T" section of the center mounting frame. In such cases, use the 1" machine screws supplied. Install the four 1" screws from the front of the frame approximately 6" apart so each corner of the K357A panel will rest against the ends of the screws. Install the 1/4" screws from the rear.

Strapping

3.03 Terminals on the K-357A KTU must be strapped according to the number of stations, (9, 18, 27, or 36). Refer to Table B for strapping instructions.

Connections Between K357A KTU and the KTS Connecting Blocks

3.04 For 9 or 18-stations, order separately the appropriate cable in Table A for making connections in a K-501A or K-512A KSU for 18-stations. If interconnect cable is not ordered use seven lengths of 22-gauge wire, (any color), and strap from the KTS Connecting Blocks to T, R, L, LB, RB, AB, and AG terminals of the K-357A KTU as shown in Table B. Use two other lengths and connect from P5 - 28 and P5 - 4 to TB1 - 6 of K-512A KSU. In a K-501A connect from TBA - 43 to TBC - 39 and from TBB - 49 to TBC - 49.

3.05 When the interconnect cable is used refer to Table C and make the appropriate connections for 9 or 18-stations. If more stations are desired it will be necessary to make other arrangements.

NOTE: If more than 18 stations are used in a system, additional connecting points for signaling leads will be required.

3.06 To expand to 27 stations, use 10 lengths 24-gauge wire and, beginning with R31 connect the next ten (R) leads to terminals 21B through 30B. (Station codes are 4 through 9, and 0, and 20 through 39.) Disconnect the GN-BK lead from 3B.

3.07 To expand to 36 stations, use 10 lengths of 24-gauge wire and, beginning with

R41 connect the ten (R) leads to terminals 31B through 40B. (Station codes are 5 through 9, 0, and 21 through 49.) Disconnect the BK-BN lead from 4B.

Plugging in Printed Circuit Cards

3.08 Each printed circuit card is identified by a code stamped on the pull handle and each slot of the K357A Panel is stamped with a matching code.

3.09 For nine stations, plug the three basic cards, (Codes K160C, K166A, and K166B), into the appropriate slots of the K357A Panel with the printed circuit side to the installer's left. For each additional nine stations, plug a K160B KTU into succeeding slots as required.

NOTES:

- (1) Connect yel-slt and slt-yel audible signal leads to B and R terminals respectively for desired station number.
- (2) Terminate intercom lamp ground leads from telephones to LG terminals of KSU blocks.

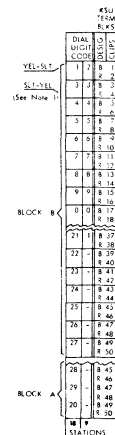
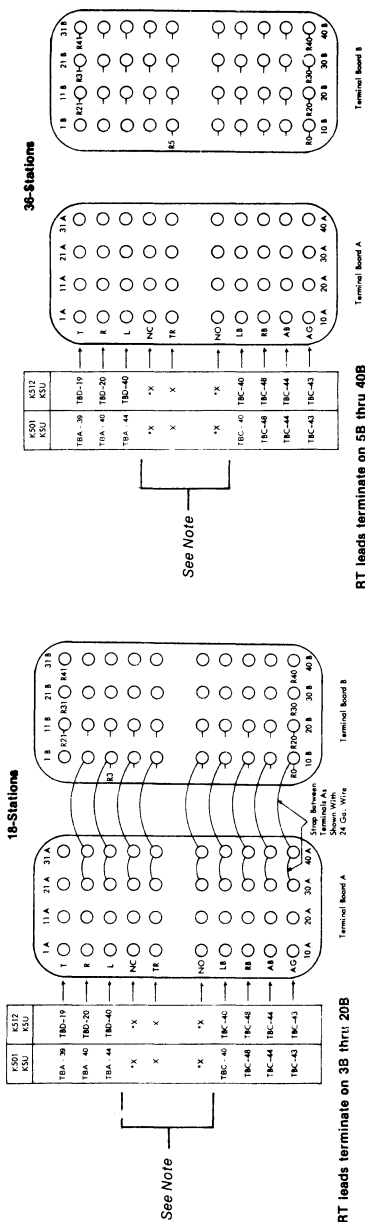
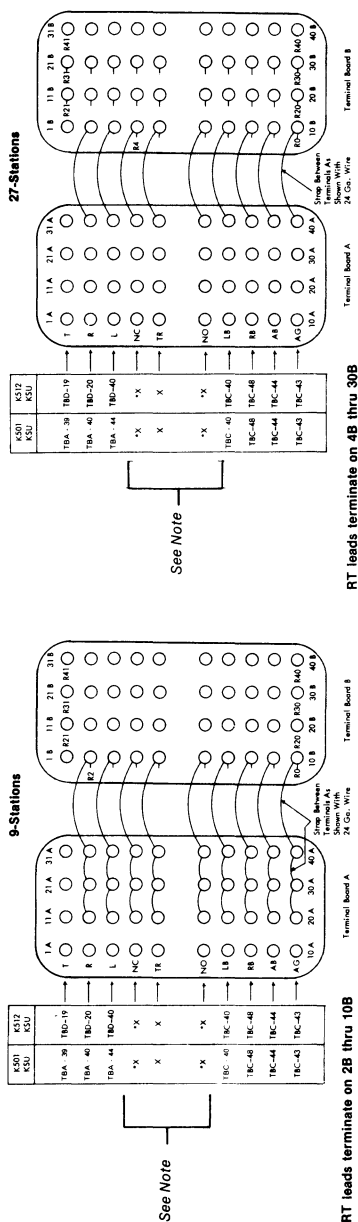


Fig. 3 - Intercom Station Digit Assignment on KTS Connection Blocks, K501 KSU.

Table B. Strapping and KSU Connections for K357A



NOTE: Terminals 4A and 5A are connected to normally-closed relay contacts on the K160C card. If a K401PA or K401CAP KTU is installed, one of these terminals must be connected to pin 16 of the K401PA or K401CAP and the other terminal to circuit ground. Terminals 5A and 6A provide a normally open contact set to be used if required by the application.

TABLE C. CONNECTIONS BETWEEN KSU AND K-357A KTU

K-357A LEAD DESIGNATION	K-501 KSU	K-501A KSU	K-512 KSU	K-512A KSU	CABLE COLOR	K357A TERMINAL	POWER SUPPLY TERMINAL
T	TBA-39	TBA-39	TBD-19	P5-26	WH-BL	A1	
R	TBA-40	TBA-40	TBD-20	P5-1	BL-WH	A2	
LG	NA	TBA-43	NA	P5-2	WH-GN		TB1-6 TBC-39**
L	TBA-44	TBA-44	TBD-40	P5-3	GN-WH	A3	
RG	NA	TBB-49	NA	P5-4	BN-WH		TB1-6 TBC-49**
RT1						B1	
RT2	TBB-2*	TBB-2*	TBE-4*	P5-38*	BK-GN	B2*	
RT3	TBB-4		TBE-6	P5-13	GN-BK	B3	
RT4	TBB-6		TBE-8	P5-39	BK-GN	B4	
RT5	TBB-8		TBE-10	P5-14	BN-BK	B5	
RT6	TBB-10		TBE-12	P5-40	BK-SL	B6	
RT7	TBB-12		TBE-14	P5-15	SL-BK	B7	
RT8	TBB-14		TBE-16	P5-41	YL-BL	B8	
RT9	TBB-16		TBE-18	P5-16	BL-YL	B9	
RT0	TBB-18		TBE-20	P5-42	YL-OR	B10	
RT1	TBB-38		TBE-22	P5-17	OR-YL	B11	
RT22	TBB-40		TBE-24	P5-43	YL-GN	B12	
RT23	TBB-42		TBE-26	P5-18	GN-YL	B13	
RT24	TBB-44		TBE-28	P5-44	YL-BN	B14	
RT25	TBB-46		TBE-30	P5-19	BN-YL	B15	
RT26	TBB-48		TBE-32	P5-45	YL-SL	B16	
RT27	TBB-50	TBB-50	TBE-34	P5-20	SL-YL	B17	
RT28	TBA-46	TBA-46	TBE-36	P5-46	VI-BL	B18	
RT29	TBA-48	TBA-48	TBE-38	P5-21	BL-VI	B19	
RT20	TBA-50	TBA-50	TBE-40	P5-47	VI-OR	B20	
NC						A4	
TF or TR						A5	
NO						A6	
LB	TBC-40	TBC-40	TBC-40		WH-SL	A7	TB1-2**
RB	TBC-48	TBC-48	TBC-48		WH-BR	A8	TB1-5**
AB	TBC-44	TBC-44	TBC-44		WH-OR	A9	TB1-3**
AG	TBC-43	TBC-43	TBC-43		OR-WH	A10	TB1-7**

*9-Station Only
 **K-512A KSU Only

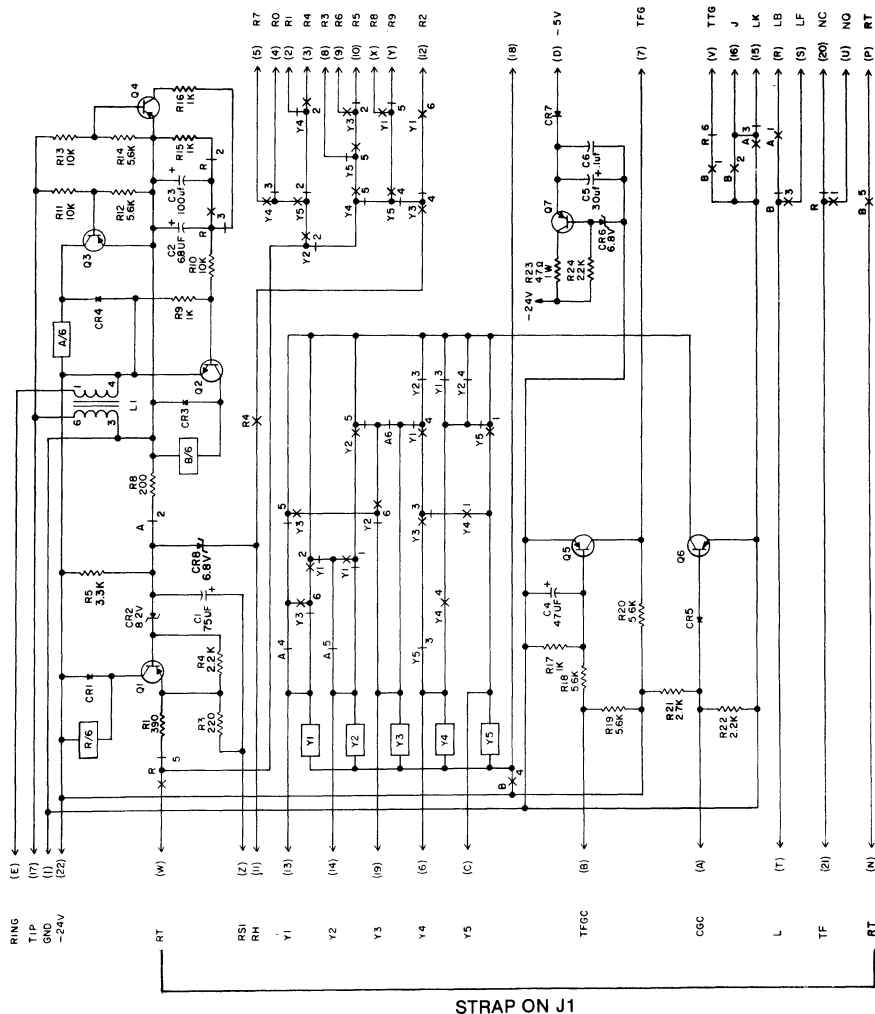


Fig. 4 - Circuit Diagram, K160C KTU

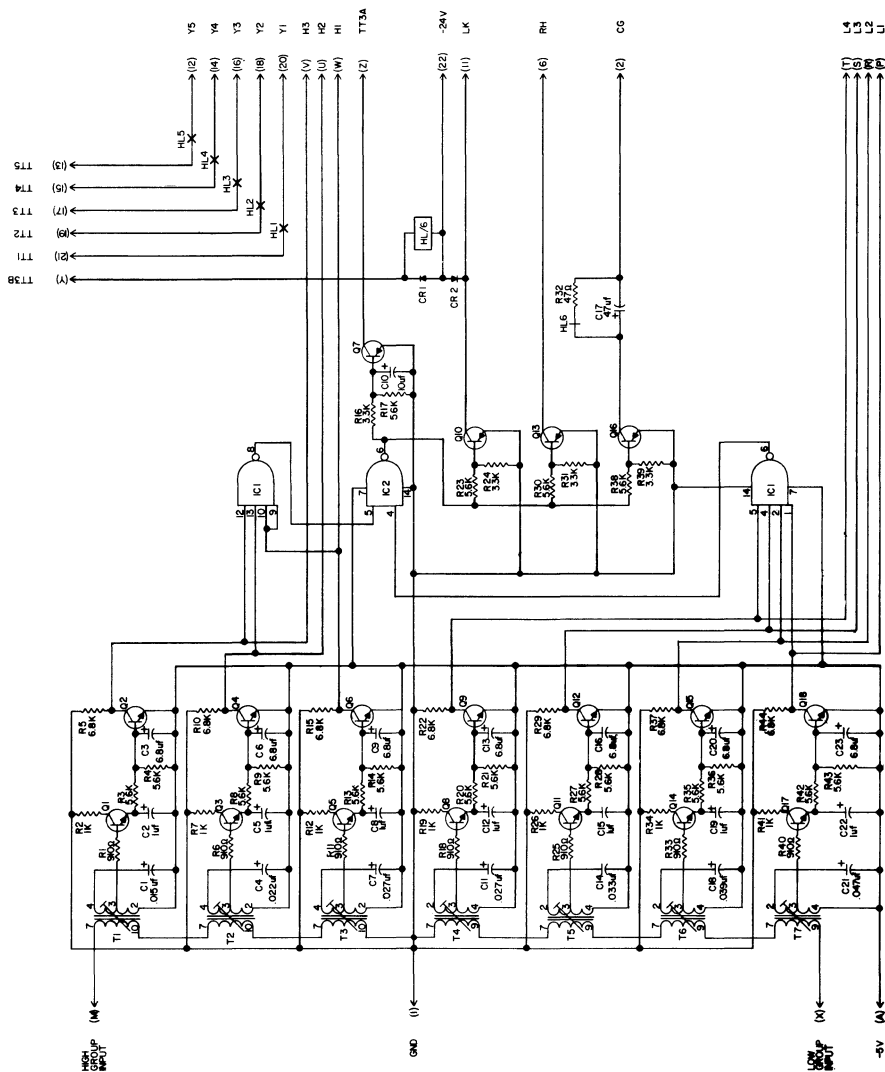


Fig. 5 - Circuit Diagram, K166A KTU

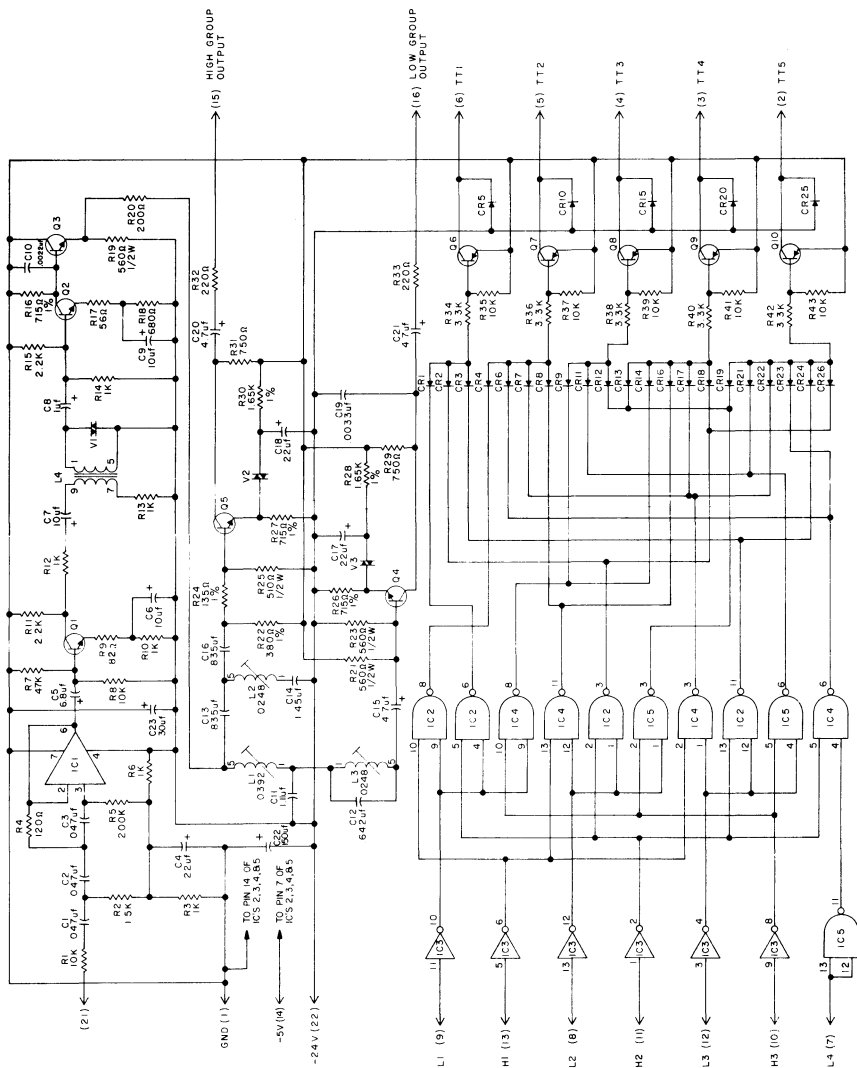


Fig. 6 - Circuit Diagram, K166B KTU

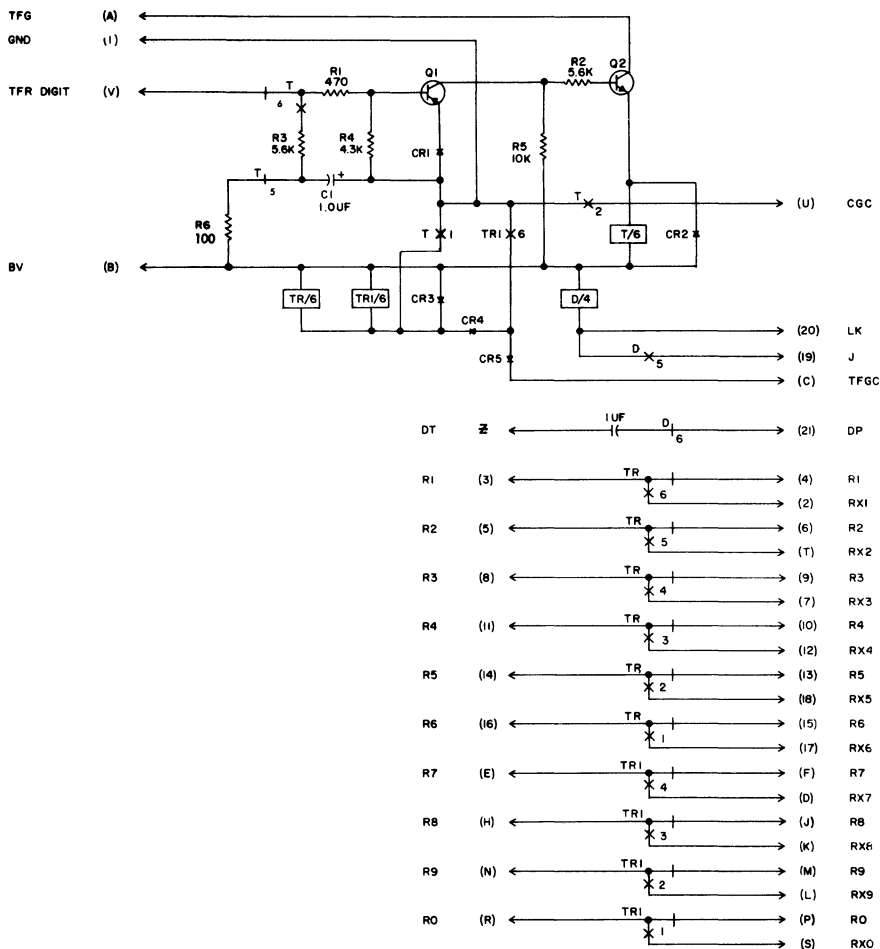


Fig. 7 - Circuit Diagram, K160B KTU

KTU Interconnection

31	J5-4 BK/BL	21	J4-4 R/BL	11	J1-2 V	1	J1-17 BL
32	J5-6 BL/BK	22	J4-6 BL/R	12	J1-12 Y	2	J1-E O
33	J5-9 BK/O	23	J4-9 R/O	13	J1-8 R	3	J1-T W
34	J5-10 O/BK	24	J4-10 O/R	14	J1-3 W	4	J1-20 V
35	J5-13 BK/GN	25	J4-13 R/GN	15	J1-10 SL	5	J1-21 GN
36	J5-15 GN/BK	26	J4-15 GN/R	16	J1-9 BK	6	J1-U O
37	J5-F BK/BN	27	J4-F R/BN	17	J1-5 GN	7	J1-R GN
38	J5-J BN/BK	28	J4-J BN/R	18	J1-X O	8	J1-P BN
39	J5-M BK/SL	29	J4-M R/SL	19	J1-Y BL	9	J1-22 R
40	J5-P SL/BK	30	J4-P SL/R	20	J1-4 BN	10	J1-1 BK
TERMINAL BOARD A							

31	J6-2 W/BL	21	J5-2 W/BL	11	J4-2 W/BL	1	J6-4 V
32	J6-T BL/W	22	J5-T BL/W	12	J4-T BL/W	2	J6-6 W
33	J6-7 W/O	23	J5-7 W/O	13	J4-7 W/O	3	J6-9 W
34	J6-12 O/W	24	J5-12 O/W	14	J4-12 O/W	4	
35	J6-18 W/GN	25	J5-18 W/GN	15	J4-18 W/GN	5	J6-13 SL
36	J6-17 GN/W	26	J5-17 GN/W	16	J4-17 GN/W	6	J6-15 BK
37	J6-D W/BN	27	J5-D W/BN	17	J4-D W/BN	7	J6-F GN
38	J6-K BN/W	28	J5-K BN/W	18	J4-K BN/W	8	J6-J O
39	J6-L W/SL	29	J5-L W/SL	19	J4-L W/SL	9	J6-M BL
40	J6-S SL/W	30	J5-S SL/W	20	J4-S SL/W	10	J6-P BN
TERMINAL BOARD B							

Fig. 8 - K357A Terminal Boards A and B

[illegible]

TFR-1 K160B										TFR-2 K160B										TFR-3 K160B									
O	J1-7	J5-A	J1-8	J5-B	J1-9	J5-C	J1-10	J5-D	J1-11	J5-E	J1-12	J5-F	J1-13	J5-G	J1-14	J5-H	J1-15	J5-I	J1-16	J5-J	J1-17	J5-K	J1-18	J5-L	J1-19	J5-M	J1-20	J5-N	
Y	J1-17	J5-L	J1-18	J5-M	J1-19	J5-N	J1-20	J5-O	J1-21	J5-P	J1-22	J5-Q	J1-23	J5-R	J1-24	J5-S	J1-25	J5-T	J1-26	J5-U	J1-27	J5-V	J1-28	J5-W	J1-29	J5-X	J1-30	J5-Y	
GN	J1-30	J5-Y	J1-31	J5-Z	J1-32	J5-AA	J1-33	J5-AB	J1-34	J5-AC	J1-35	J5-AD	J1-36	J5-AE	J1-37	J5-AF	J1-38	J5-AG	J1-39	J5-AH	J1-40	J5-AI	J1-41	J5-AJ	J1-42	J5-AK	J1-43	J5-AL	
W/BN	J1-43	J5-AL	J1-44	J5-AM	J1-45	J5-AN	J1-46	J5-AO	J1-47	J5-AP	J1-48	J5-AQ	J1-49	J5-AR	J1-50	J5-AS	J1-51	J5-AT	J1-52	J5-AU	J1-53	J5-AV	J1-54	J5-AW	J1-55	J5-AX	J1-56	J5-AY	
GN	J1-56	J5-AY	J1-57	J5-AZ	J1-58	J5-BA	J1-59	J5-BB	J1-60	J5-BB	J1-61	J5-BC	J1-62	J5-BC	J1-63	J5-BD	J1-64	J5-BD	J1-65	J5-BE	J1-66	J5-BE	J1-67	J5-BF	J1-68	J5-BF	J1-69	J5-BG	
R/BN	J1-69	J5-BG	J1-70	J5-BH	J1-71	J5-BH	J1-72	J5-BI	J1-73	J5-BI	J1-74	J5-BJ	J1-75	J5-BJ	J1-76	J5-BK	J1-77	J5-BK	J1-78	J5-BL	J1-79	J5-BL	J1-80	J5-BM	J1-81	J5-BM	J1-82	J5-BN	
R/BN	J1-82	J5-BN	J1-83	J5-BO	J1-84	J5-BO	J1-85	J5-BP	J1-86	J5-BP	J1-87	J5-BQ	J1-88	J5-BQ	J1-89	J5-BR	J1-90	J5-BR	J1-91	J5-BR	J1-92	J5-BS	J1-93	J5-BS	J1-94	J5-BT	J1-95	J5-BT	
O	J1-95	J5-BT	J1-96	J5-BU	J1-97	J5-BU	J1-98	J5-BV	J1-99	J5-BV	J1-100	J5-BW	J1-101	J5-BW	J1-102	J5-BX	J1-103	J5-BX	J1-104	J5-BX	J1-105	J5-BY	J1-106	J5-BY	J1-107	J5-BZ	J1-108	J5-CA	
J1-X	J1-108	J5-CA	J1-109	J5-CB	J1-110	J5-CB	J1-111	J5-CC	J1-112	J5-CC	J1-113	J5-CD	J1-114	J5-CD	J1-115	J5-CE	J1-116	J5-CE	J1-117	J5-CE	J1-118	J5-CE	J1-119	J5-CE	J1-120	J5-CE	J1-121	J5-CE	
J1-Y	J1-121	J5-CE	J1-122	J5-CD	J1-123	J5-CD	J1-124	J5-CE	J1-125	J5-CE	J1-126	J5-CE	J1-127	J5-CD	J1-128	J5-CD	J1-129	J5-CE	J1-130	J5-CE	J1-131	J5-CE	J1-132	J5-CE	J1-133	J5-CD	J1-134	J5-CD	
J1-Z	J1-134	J5-CD	J1-135	J5-CE	J1-136	J5-CE	J1-137	J5-CD	J1-138	J5-CD	J1-139	J5-CE	J1-140	J5-CE	J1-141	J5-CD	J1-142	J5-CE	J1-143	J5-CE	J1-144	J5-CD	J1-145	J5-CE	J1-146	J5-CD	J1-147	J5-CE	
J1-AA	J1-147	J5-CE	J1-148	J5-CD	J1-149	J5-CD	J1-150	J5-CE	J1-151	J5-CE	J1-152	J5-CD	J1-153	J5-CE	J1-154	J5-CD	J1-155	J5-CE	J1-156	J5-CE	J1-157	J5-CD	J1-158	J5-CE	J1-159	J5-CD	J1-160	J5-CE	
J1-AB	J1-160	J5-CE	J1-161	J5-CD	J1-162	J5-CD	J1-163	J5-CE	J1-164	J5-CE	J1-165	J5-CD	J1-166	J5-CE	J1-167	J5-CD	J1-168	J5-CE	J1-169	J5-CD	J1-170	J5-CE	J1-171	J5-CD	J1-172	J5-CE	J1-173	J5-CD	
J1-AC	J1-173	J5-CD	J1-174	J5-CE	J1-175	J5-CE	J1-176	J5-CD	J1-177	J5-CE	J1-178	J5-CD	J1-179	J5-CE	J1-180	J5-CD	J1-181	J5-CE	J1-182	J5-CD	J1-183	J5-CE	J1-184	J5-CD	J1-185	J5-CE	J1-186	J5-CD	
J1-AD	J1-186	J5-CD	J1-187	J5-CE	J1-188	J5-CE	J1-189	J5-CD	J1-190	J5-CE	J1-191	J5-CD	J1-192	J5-CE	J1-193	J5-CD	J1-194	J5-CE	J1-195	J5-CD	J1-196	J5-CE	J1-197	J5-CD	J1-198	J5-CE	J1-199	J5-CD	
J1-AE	J1-199	J5-CD	J1-200	J5-CE	J1-201	J5-CE	J1-202	J5-CD	J1-203	J5-CE	J1-204	J5-CD	J1-205	J5-CE	J1-206	J5-CD	J1-207	J5-CE	J1-208	J5-CD	J1-209	J5-CE	J1-210	J5-CD	J1-211	J5-CE	J1-212	J5-CD	
J1-AF	J1-212	J5-CD	J1-213	J5-CE	J1-214	J5-CE	J1-215	J5-CD	J1-216	J5-CE	J1-217	J5-CD	J1-218	J5-CE	J1-219	J5-CD	J1-220	J5-CE	J1-221	J5-CD	J1-222	J5-CE	J1-223	J5-CD	J1-224	J5-CE	J1-225	J5-CD	
J1-AG	J1-225	J5-CD	J1-226	J5-CE	J1-227	J5-CE	J1-228	J5-CD	J1-229	J5-CE	J1-230	J5-CD	J1-231	J5-CE	J1-232	J5-CD	J1-233	J5-CE	J1-234	J5-CD	J1-235	J5-CE	J1-236	J5-CD	J1-237	J5-CE	J1-238	J5-CD	
J1-AH	J1-238	J5-CD	J1-239	J5-CE	J1-240	J5-CE	J1-241	J5-CD	J1-242	J5-CE	J1-243	J5-CD	J1-244	J5-CE	J1-245	J5-CD	J1-246	J5-CE	J1-247	J5-CD	J1-248	J5-CE	J1-249	J5-CD	J1-250	J5-CE	J1-251	J5-CD	
J1-AI	J1-251	J5-CD	J1-252	J5-CE	J1-253	J5-CE	J1-254	J5-CD	J1-255	J5-CE	J1-256	J5-CD	J1-257	J5-CE	J1-258	J5-CD	J1-259	J5-CE	J1-260	J5-CD	J1-261	J5-CE	J1-262	J5-CD	J1-263	J5-CE	J1-264	J5-CD	
J1-AJ	J1-264	J5-CD	J1-265	J5-CE	J1-266	J5-CE	J1-267	J5-CD	J1-268	J5-CE	J1-269	J5-CD	J1-270	J5-CE	J1-271	J5-CD	J1-272	J5-CE	J1-273	J5-CD	J1-274	J5-CE	J1-275	J5-CD	J1-276	J5-CE	J1-277	J5-CD	
J1-AK	J1-277	J5-CD	J1-278	J5-CE	J1-279	J5-CE	J1-280	J5-CD	J1-281	J5-CE	J1-282	J5-CD	J1-283	J5-CE	J1-284	J5-CD	J1-285	J5-CE	J1-286	J5-CD	J1-287	J5-CE	J1-288	J5-CD	J1-289	J5-CE	J1-290	J5-CD	
J1-AL	J1-290	J5-CD	J1-291	J5-CE	J1-292	J5-CE	J1-293	J5-CD	J1-294	J5-CE	J1-295	J5-CD	J1-296	J5-CE	J1-297	J5-CD	J1-298	J5-CE	J1-299	J5-CD	J1-300	J5-CE	J1-301	J5-CD	J1-302	J5-CE	J1-303	J5-CD	
J1-AM	J1-303	J5-CD	J1-304	J5-CE	J1-305	J5-CE	J1-306	J5-CD	J1-307	J5-CE	J1-308	J5-CD	J1-309	J5-CE	J1-310	J5-CD	J1-311	J5-CE	J1-312	J5-CD	J1-313	J5-CE	J1-314	J5-CD	J1-315	J5-CE	J1-316	J5-CD	
J1-AN	J1-316	J5-CD	J1-317	J5-CE	J1-318	J5-CE	J1-319	J5-CD	J1-320	J5-CE	J1-321	J5-CD	J1-322	J5-CE	J1-323	J5-CD	J1-324	J5-CE	J1-325	J5-CD	J1-326	J5-CE	J1-327	J5-CD	J1-328	J5-CE	J1-329	J5-CD	
J1-AO	J1-329	J5-CD	J1-330	J5-CE	J1-331	J5-CE	J1-332	J5-CD	J1-333	J5-CE	J1-334	J5-CD	J1-335	J5-CE	J1-336	J5-CD	J1-337	J5-CE	J1-338	J5-CD	J1-339	J5-CE	J1-340	J5-CD	J1-341	J5-CE	J1-342	J5-CD	
J1-AP	J1-342	J5-CD	J1-343	J5-CE	J1-344	J5-CE	J1-345	J5-CD	J1-346	J5-CE	J1-347	J5-CD	J1-348	J5-CE	J1-349	J5-CD	J1-350	J5-CE	J1-351	J5-CD	J1-352	J5-CE	J1-353	J5-CD	J1-354	J5-CE	J1-355	J5-CD	
J1-AQ	J1-355	J5-CD	J1-356	J5-CE	J1-357	J5-CE	J1-358	J5-CD	J1-359	J5-CE	J1-360	J5-CD	J1-361	J5-CE	J1-362	J5-CD	J1-363	J5-CE	J1-364	J5-CD	J1-365	J5-CE	J1-366	J5-CD	J1-367	J5-CE	J1-368	J5-CD	
J1-AR	J1-368	J5-CD	J1-369	J5-CE	J1-370	J5-CE	J1-371	J5-CD	J1-372	J5-CE	J1-373	J5-CD	J1-374	J5-CE	J1-375	J5-CD	J1-376	J5-CE	J1-377	J5-CD	J1-378	J5-CE	J1-379	J5-CD	J1-380	J5-CE	J1-381	J5-CD	
J1-AS	J1-381	J5-CD	J1-382	J5-CE	J1-383	J5-CE	J1-384	J5-CD	J1-385	J5-CE	J1-386	J5-CD	J1-387	J5-CE	J1-388	J5-CD	J1-389	J5-CE	J1-390	J5-CD	J1-391	J5-CE	J1-392	J5-CD	J1-393	J5-CE	J1-394	J5-CD	
J1-AT	J1-394	J5-CD	J1-395	J5-CE	J1-396	J5-CE	J1-397	J5-CD	J1-398	J5-CE	J1-399	J5-CD	J1-400	J5-CE	J1-401	J5-CD	J1-402	J5-CE	J1-403	J5-CD	J1-404	J5-CE	J1-405	J5-CD	J1-406	J5-CE	J1-407	J5-CD	
J1-AU	J1-407	J5-CD	J1-408	J5-CE	J1-409	J5-CE	J1-410	J5-CD	J1-411	J5-CE	J1-412	J5-CD	J1-413	J5-CE	J1-414	J5-CD	J1-415	J5-CE	J1-416	J5-CD	J1-417	J5-CE	J1-418	J5-CD	J1-419	J5-CE	J1-420	J5-CD	
J1-AV	J1-420	J5-CD	J1-421	J5-CE	J1-422	J5-CE	J1-423	J5-CD	J1-424	J5-CE	J1-425	J5-CD	J1-426	J5-CE	J1-427	J5-CD	J1-428	J5-CE	J1-429	J5-CD	J1-430	J5-CE	J1-431	J5-CD	J1-432	J5-CE	J1-433	J5-CD	
J1-AW	J1-433	J5-CD	J1-434	J5-CE	J1-435	J5-CE	J1-436	J5-CD	J1-437	J5-CE	J1-438	J5-CD	J1-439	J5-CE	J1-440	J5-CD	J1-441	J5-CE	J1-442	J5-CD	J1-443	J5-CE	J1-444	J5-CD	J1-445	J5-CE	J1-446	J5-CD	
J1-AX	J1-446	J5-CD	J1-447	J5-CE	J1-448	J5-CE	J1-449	J5-CD	J1-450	J5-CE	J1-451	J5-CD	J1-452	J5-CE	J1-453	J5-CD	J1-454	J5-CE	J1-455	J5-CD	J1-456	J5-CE	J1-457	J5-CD	J1-458	J5-CE	J1-459	J5-CD	
J1-AY	J1-459	J5-CD	J1-460	J5-CE	J1-461	J5-CE	J1-462	J5-CD	J1-463	J5-CE	J1-464	J5-CD	J1-465	J5-CE	J1-466	J5-CD	J1-467	J5-CE	J1-468	J5-CD	J1-469	J5-CE	J1-470	J5-CD	J1-471	J5-CE	J1-472	J5-CD	
J1-AZ	J1-472	J5-CD	J1-473	J5-CE	J1-474	J5-CE	J1-475	J5-CD	J1-476	J5-CE	J1-477	J5-CD	J1-478	J5-CE	J1-479	J5-CD	J1-480	J5-CE	J1-481	J5-CD	J1-482	J5-CE	J1-483	J5-CD	J1-484	J5-CE	J1-485	J5-CD	
J1-BA	J1-485	J5-CD	J1-486	J5-CE	J1-487	J5-CE	J1-488	J5-CD	J1-489	J5-CE	J1-490	J5-CD	J1-491	J5-CE	J1-492	J5-CD	J1-493	J5-CE	J1-494	J5-CD	J1-495	J5-CE	J1-496	J5-CD	J1-497	J5-CE	J1-498	J5-CD	
J1-BB	J1-498	J5-CD	J1-499	J5-CE	J1-500	J5-CE	J1-501	J5-CD	J1-502	J5-CE	J1-503	J5-CD	J1-504	J5-CE	J1-505	J5-CD	J1-506	J5-CE	J1-507	J5-CD	J1-508	J5-CE	J1-509	J5-CD	J1-510	J5-CE	J1-511	J5-CD	
J1-BC	J1-511	J5-CD	J1-512	J5-CE	J1-513	J5-CE	J1-514	J5-CD	J1-515	J5-CE	J1-516	J5-CD	J1-517	J5-CE	J1-518	J5-CD	J1-519	J5-CE	J1-520	J5-CD	J1-521	J5-CE	J1-522	J5-CD	J1-523	J5-CE	J1-524	J5-CD	
J1-BD	J1-524	J5-CD	J1-525	J5-CE	J1-526	J5-CE	J1-527	J5-CD	J1-528	J5-CE	J1-529	J5-CD	J1-530	J5-CE	J1-531	J5-CD	J1-532	J5-CE	J1-533	J5-CD	J1-534	J5-CE	J1-535	J5-CD	J1-536	J5-CE	J1-537	J5-CD	
J1-BE	J1-537	J5-CD	J1-538	J5-CE	J1-539	J5-CE	J1-540	J5-CD	J1-541	J5-CE	J1-542	J5-CD	J1-543	J5-CE	J1-544	J5-CD	J1-545	J5-CE	J1-546	J5-CD	J1-547	J5-CE	J1-548	J5-CD	J1-549	J5-CE	J1-550	J5-CD	
J1-BF	J1-550	J5-CD	J1-551	J5-CE	J1-552	J5-CE	J1-553	J5-CD	J1-554	J5-CE	J1-555	J5-CD	J1-556	J5-CE	J1-557	J5-CD	J1-558	J5-CE	J1-559	J5-CD	J1-560	J5-CE	J1-561	J5-CD	J1-562	J5-CE	J1-563	J5-CD	
J1-BG	J1-563	J5-CD	J1-564	J5-CE	J1-565	J5-CE	J1-566	J5-CD	J1-567	J5-CE	J1-568	J5-CD	J1-569	J5-CE	J1-570	J5-CD	J1-571	J5-CE	J1-572	J5-CD	J1-573	J5-CE	J1-574	J5-CD	J1-575	J5-CE	J1-576	J5-CD	
J1-BH	J1-576	J5-CD	J1-577	J5-CE	J1-578	J5-CE	J1-579																						