

**EXTROM™**

ELECTRONIC KEY TELEPHONE SYSTEM

**HMS-1032 EE**

INSTALLATION MANUAL



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## 1. INSTALLATION

## PLANNING

1.01 Survey the area to be served by the HMS-1032EE Electronic Key Telephone System and select a location that fulfills the following requirements:

- Provides a safe working location.
- Has adequate light and is always accessible.
- Has sufficient clearance above the floor to avoid damage from water and avoid being struck by cleaning equipment.
- Is clean, dry, well-ventilated, and free from corrosive fumes?
- Is not subject to temperatures below 32 F (0°C) or above 104 F (40°C)?
- Is centrally located with respect to the stations to permit the shortest wiring runs?
- Is located within 900, 700, or 500 feet of the furthest station when using 22, 24, or 26 AWG wire, respectively?
- Is within 25 feet of the telephone company's terminal block?
- Is near a commercial ac power receptacle?
- Meet with the customer's approval.

1.02 Arrange for the customer to provide a commercial 115V ac power receptacle in accordance with the following:

- Is served by a separate fuse or circuit breaker?
- Is not under control of any switch?
- Is of the grounded three wire type?

## UNPACKING

1.03 To prevent damage to equipment and to avoid misplacing hardware items, the key telephone system shall be unpacked as follows:

- (1) Upon receipt of the shipment, check the equipment against the purchase order and packing list to ensure that the listed items have been supplied. Immediately file a shortage report with the supplier should any items be missing or incorrect.
- (2) Unpack the key service unit and remove it from the carton. Do not discard the KSU carton until all the equipment has been installed and the system fully tested.
- (3) Check that the miscellaneous KSU hardware items listed in Table A have been provided.
- (4) Inspect the KSU for:
  - Damaged or loose connectors
  - Broken or loose circuit cards
  - Broken wires
  - Damaged ac power cord
  - Broken or bent connector pins
  - Scratches or dents in the cabinet
  - Loose screws on the cover
- (5) Unpack the telephone instruments and handsets and remove them from their shipping cartons.
- (6) Locate all the miscellaneous items of telephone set hardware listed in Table A.
- (7) Inspect the telephone sets for damage to the keypad, handset cord line cord, modular connectors, jacks, and molded plastic parts.
- (8) Do not remove circuit board SXDU from its box until it is ready to be installed.

TABLE A

## ORDERING GUIDE--REPLACEMENT HARDWARE

QUANTITY REQUIRED	MOUNTING LOCATION	DESCRIPTION
2	KSU	Fuse, 4A
4		Screw, wood, phillips-head, M4.1 X 32S
4		User's Guide
1		Installation Manual
1	Station instrument	Card, directory
1		Card, operation guide
1		Tray, pull-out
1		key top, designation tab
1		Cover, designation
1	Power-failure transfer unit	Cable, power, 2000L
1		Cable, modular, three-pair
2		Screw, wood, phillips-head, M3.1 X 16S
1	Wall-mounting kit	Bracket, wall-mounting
1		Hook, handset
1		Cord, adapter
2		Screw, phillips-head, M3 X 8S
4		Screw, wood, phillips-head, M4.1 X 16S
1	Adjustable bracket	Bracket
1		Screw, self-tapping, phillips-head, M3 X 12S
4	E-16STU	Stand-off D
2		Spacer, DLCBS-14N
1		Flat cable, S/C-34 X 70BD
1		Flat cable, S/C-18 X 110BD
2	SNDU	Spacer, PCB-4L
2		Spacer, PCB-4S
1		Flat cable, S/C-13 X 50BD
2		Screw, with large washer, M3 X 6S
2	DPIU BOX	Cable, power, 2000L
4		Screw, wood, phillips-head, M3.1 X 16S

## PRECAUTIONS

1.04 The following precautions must be observed to prevent damage to circuit boards and components:

- Unplug the ac power cord before installing or removing printed circuit boards.
- Do not remove circuit card from its antistatic bag until they are ready to be plugged into the KSU.
- Before handling any circuit cards, the installer must discharge any static buildup on his body by touching a good ground.
- Do not drop or rattle circuit card.
- Do not grasp the cards by the components.
- Do not touch the circuit runs on the board.
- Only handle the circuit board by its edges.
- Do not install and remove circuit cards unnecessarily.
- Do not attempt field repairs.
- Do not expose cards to temperature extremes or high humidity or store them in such areas.
- Printed circuit cards must be stored in their antistatic bags when not in use.

## MOUNTING THE KSU

1.05 At the selected location, mount the key service unit as follows:

- (1) Fasten a piece of 3/4-inch plywood to the wall, using the appropriate screws or anchors. The plywood section should be large enough to accommodate the KSU and any other apparatus requiring wall mounting, but in no case should it be less than 20 inches wide and 20 inches high.

- (2) Using the KSU as a guide, mark on the plywood the location of the four screw holes.

- (3) Fasten 1-1/4 inch #8 screws at the upper two locations marked on the plywood. Leave a 1/5 inch gap between the screwhead and the plywood.

- (4) Place the KSU against the plywood so that the two screws extend through the top keyhole slots.

- (5) Allow the KSU to slide down until it is resting on the two screws. Tight the screws.

- (6) Place 1-1/4 inch #8 screws in the bottom two mounting holes on the KSU at the top of the keyhole slots, and secure the KSU firmly to the plywood.

## GROUNDING THE KSU

1.06 To protect the key system from service failures caused by voltage surges and dissimilar grounds, the following grounding procedure shall be followed:

- (1) Run a 12AWG or larger copper ground wire from the lower lefthand corner of the KSU to the nearest cold water pipe, building ground, or ground rod.

Note: The cold water pipe system may not be utilized if it contains sections of plastic pipe or PCV elbows or unions.

- (2) Fasten the ground wire to the cold water pipe ground, building ground, or ground rod, using an approved ground clamp.

- (3) At the other end, fasten the ground wire to the KSU ground terminal located on the underside of the KSU to the right of the ac power cord entry.

Caution: Do not use the third wire (Green) of the ac cord, or electrical outlet boxes or conduits for the KSU ground.

## SECTION 1032-01

### WIRING THE CENTRAL OFFICE LINES

#### A. General

1.07 The central office lines are brought in by the telephone company and terminated on either RJ-14C or RJ-21X network interfaces in accordance with FCC regulations. The RJ-14C is a 2-pair modular jack; one is required for up to two CO lines and five are required for ten CO lines. The RJ-21X is a standard 25-pair female Amphenol-type cable connector, which in addition to terminating the ten CO lines serving the HNS-1032EE, may also be used to terminate lines for other services required by the customer such as facsimile or telex. At the KSU, the CO lines terminate in a RJ-21X male Amphenol-type connector.

#### B. RJ-14C Network Interface

1.08 The following materials are required to connect the KSU to the RJ-14C jack.

- A25C single ended female connector cable
- D4BU 4-conductor cord terminated in modular plugs at both ends (five required)
- 625A2M-4 four-wire surface-mounted modular jack assembly (five required)
- 66B4-25 connecting block
- Two twisted pair cable

1.09 The procedure for wiring the central office lines utilizing the RJ-14C network interface is as follows:

- (1) Mount the five modular jack assemblies and the connecting block CBI to the plywood back board between the KSU and RJ-14C jacks.
- (2) Run five two twisted pair cables from the modular jack assemblies of step(1) to the connecting block CBI of step(1).
- (3) Terminate one end of the five two twisted pair cables on the jack assemblies and the other end of them on the connecting block CBI in accordance with Fig.1-1

(4) Run the A25C connector cable from the KSU to the connecting block CBI of step(1).

(5) Terminate the A25C connector cable on the connecting block CBI in accordance with Fig.1-1 and Table B.

(6) Take the D4BU cords and connect the modular jacks of step(1) to the RJ-14C jacks.

(7) Plug the A25C connector cable into the connector labeled "CO1-CO10" in the lefthand of the KSU.

#### C. RJ-21X Network Interface

1.10 The following materials are required to connect the KSU to the RJ-21X jack.

- A25C single ended male connector cable
- A25C single ended female connector cable
- 66B4-25 connecting block

1.11 The procedure for wiring the central office lines utilizing the RJ-21X network interface is as follows:

(1) Mount the connecting block CBI to the plywood back board between the KSU and RJ-21X jacks.

(2) Run one A25C male connector cable from the RJ-21X jack to the connecting block CBI of step(1).

(3) Terminate the A25C male connector cable of step(2) on connecting block CBI in accordance with Fig.1-2.

(4) Run the A25C female connector cable from the KSU to the connecting block CBI of step(1).

(5) Terminate the A25C female connector cable of step(4) on the connecting block CBI in accordance with Fig.1-2 and Table B.

(6) Plug the A25C male connector cable into RJ-21X jack.

(7) Plug the A25C female connector cable into the connector labeled "CO1-CO10" in the lefthand of the KSU.

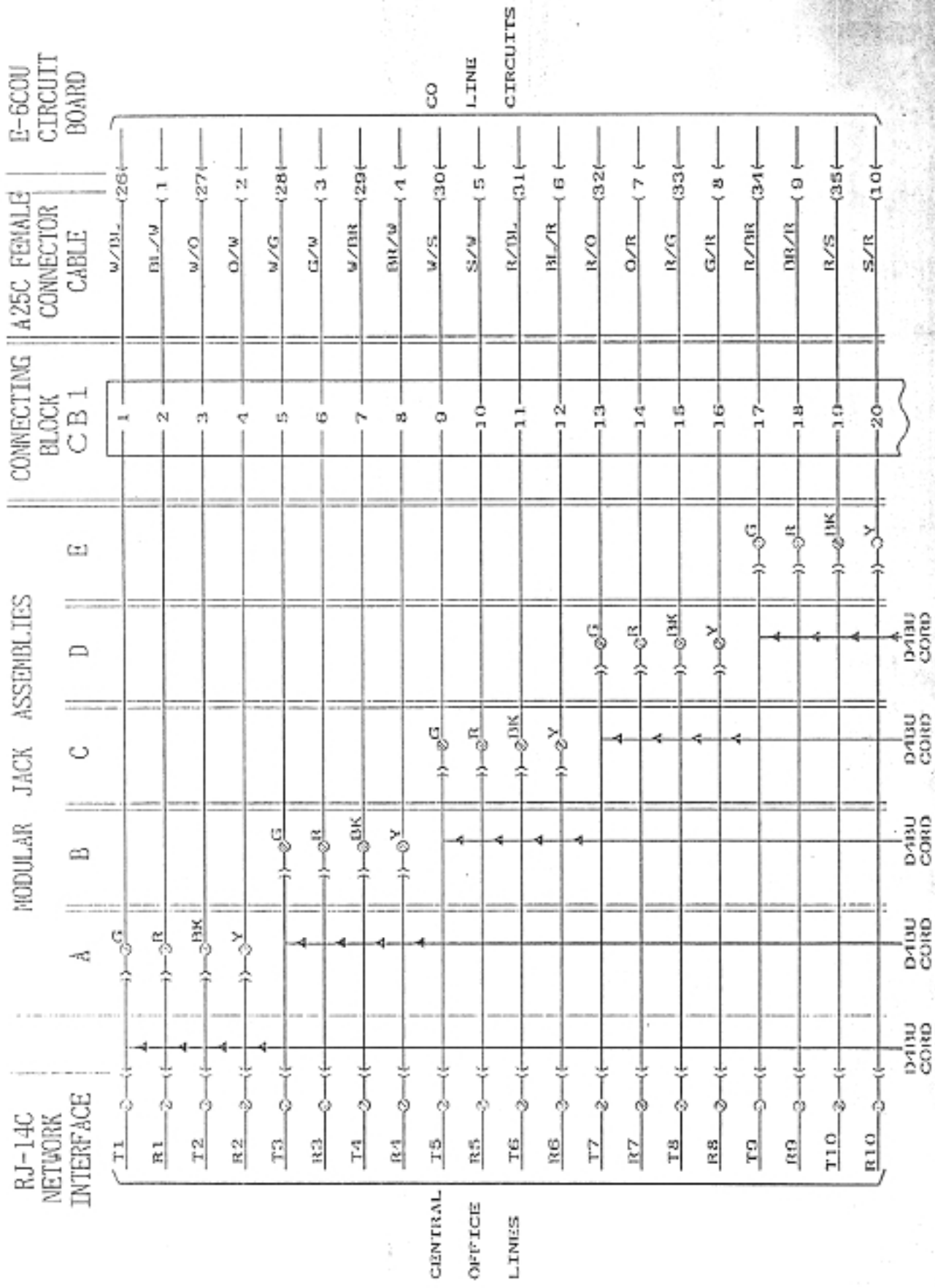


Fig. 1-1 Connections for Central Office Lines Using Five RJ-14C Network Interface

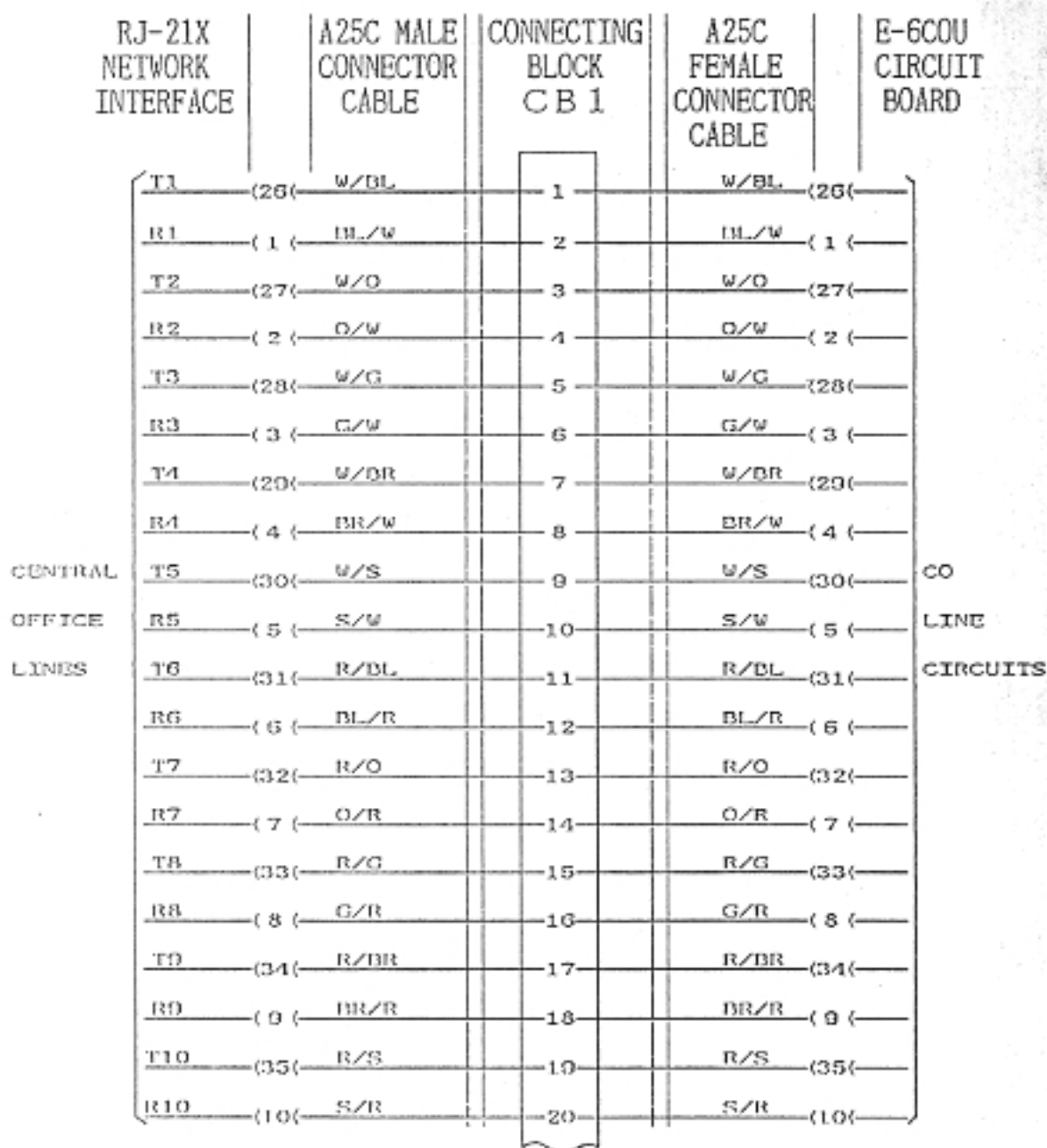


Fig.1-2 Connections for Central Office  
Lines Using RJ-21X Network Interface



TABLE B

CONNECTIONS FOR CONNECTING BLOCK CB1  
(C.O. Lines, Doorphone, Loud Bell, and Dry Contact)

CIRCUIT	CONN CABLE			BLOCK CB 66-TYPE CONN BLOCK	
	LEAD DESIG	PIN NO.	CABLE COLOR	ROW	COLUMN
C01	1T	26	V-BL	1	
	1R	1	BL-V	2	
C02	2T	27	V-O	3	
	2R	2	O-V	4	
C03	3T	28	V-G	5	
	3R	3	G-V	6	
C04	4T	29	V-BR	7	
	4R	4	BR-V	8	
C05	5T	30	V-S	9	
	5R	5	S-V	10	
C06	6T	31	R-BL	11	
	6R	6	BL-R	12	
C07	7T	32	R-O	13	
	7R	7	O-R	14	
C08	8T	33	R-G	15	
	8R	8	G-R	16	
C09	9T	34	R-BR	17	
	9R	9	BR-R	18	
C010	10T	35	R-S	19	
	10R	10	S-R	20	
DOORPHONE	CONTROL	22	O-V	44	
	VOICE 1	48	V-G	45	
	VOICE 2	23	G-V	46	
LOUD BELL	CONTACT 1	49	V-BR	47	
	CONTACT 2	24	BR-V	48	
DRY CONTACT	CONTACT 1	50	V-S	49	
	CONTACT 2	25	S-V	50	

SECTION 1032-01

INSTALLING THE POWER FAILURE TRANSFER UNIT

1.12 In the event of a loss of commercial ac power, the power failure transfer unit transfers the central office lines from the KSU to customer-provided single line telephone sets. Each PFU cares for three CO lines, and four units are required to transfer all ten lines. The following additional materials are required:

- 6-wire double-ended modular cord (one required per PFU)
- six-wire surface-mounted modular jack assembly (two required per PFU)
- three twisted pair cable
- 2500-type single line tone-dial telephone sets for DTMF lines
- 500-type single line pulse-dial telephone sets for Pulse lines
- Modular extension cords (as required to extend the telephone set line cord to the PFU)

1.13 The first power failure transfer unit is installed and wired as follows:

- (1) Unplug the KSU's power cord from the ac receptacle.
- (2) Remove the cover of the power failure unit.
- (3) Mount the first PFU on the plywood backboard next to the KSU and label it No.1.
- (4) Connect jack CNJ in the KSU, which is labeled "PFU" in the lefthand of the KSU, with jack CNJ on the first PFU unit using the two-conductor modular power cord furnished with the PFU.
- (5) Mount one modular jack assembly to the plywood backboard between connecting block C81 to PFU.

(6) Run the three twisted pair cable from the modular jack assembly of step(5) to the connecting block C81.

(7) Terminate one end of the three twisted pair cable on the jack assembly and the other end of the cable on the connecting block C81 in accordance with Fig.1-3.

(8) Using a 6-wire double-ended modular cord, connect the modular jack assembly of step(5) with jack IC on the PFU.

(9) Mount the other modular jack assembly to the plywood backboard between the KSU and the PFU.

(10) Terminate the A25C female connector cable for the KSU on the jack assembly of step(9) in accordance with Fig.1-3.

(11) Using a 6-wire double-ended modular cord, connect the modular jack assembly of step(9) with jack IK on the PFU.

(12) Replace the cover of the power failure unit.

(13) Plug the single line telephones into jacks I11, I21, and I31.

1.14 If the 2nd, 3rd, and 4th power failure transfer units are provided, they are installed and wired as follows:

(1) Unplug the KSU's power cord from the ac receptacle.

(2) Remove the covers of the PFU's.

(3) Mount the 2nd (3rd, 4th) PFU on the plywood backboard next to the 1st and label it No.2 (No.3, No.4).

(4) Connect modular jack CNK on the 1st PFU with jack CNJ on the 2nd PFU using the two-conductor modular power cord furnished with the unit.

(5) Other steps are same as steps 5 to 13 of first PFU.

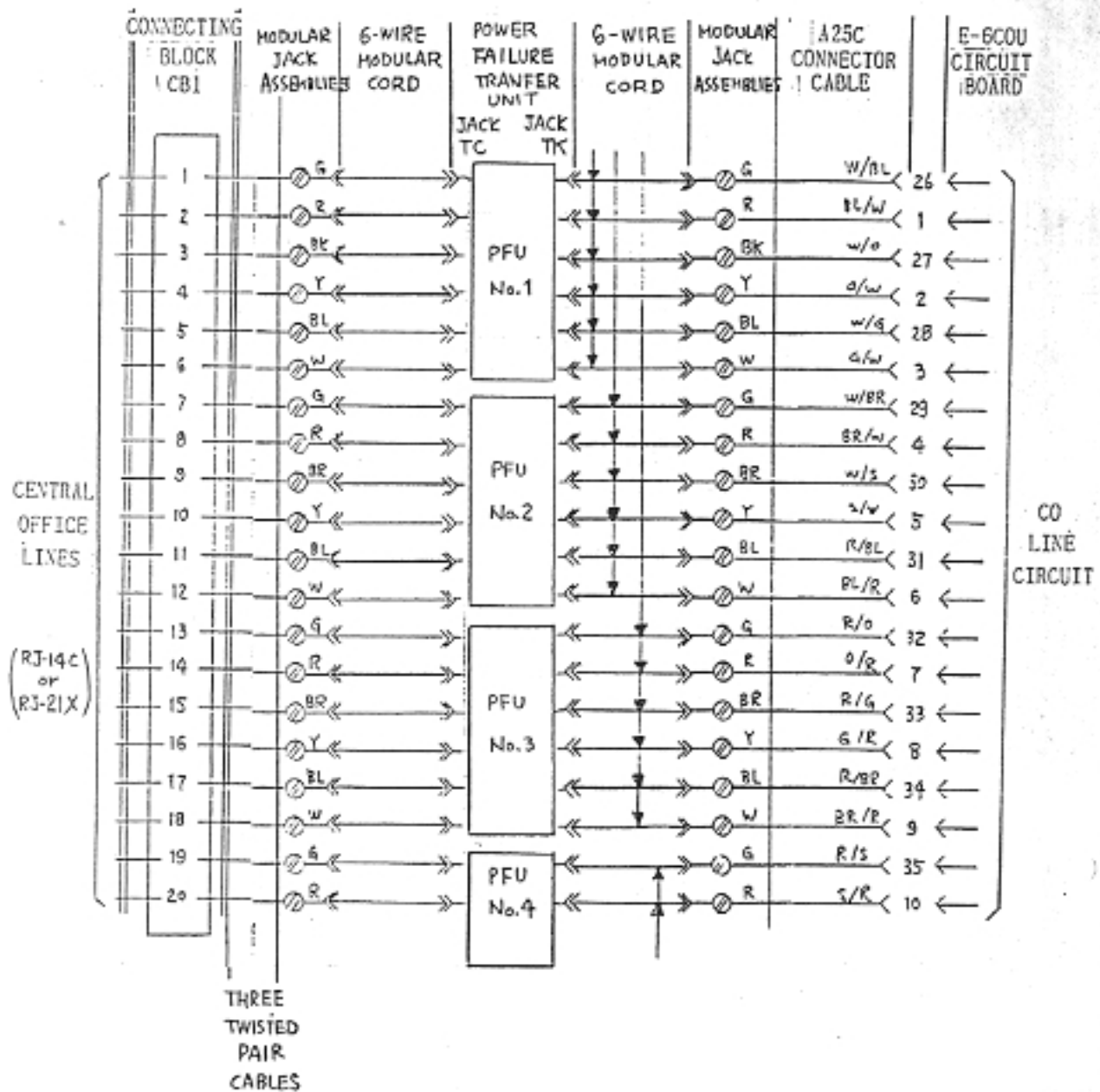


Fig. 1-3 Connections for Power Failure Transfer Units

SECTION 1032-01

CABLING THE DISTRIBUTING FRAME

1.15 The installer shall provide one 66B4-25 connecting block for a 8-station installation. The block shall be located near the KSU. The 66-type, block should not be connectorized. Designate the connecting block CB2 (CB3, CB4, or CB5). The connecting block is cabled as follows:

- (1) Run an A25C 25-pair male connectors cable from the KSU to CB2 (CB3, CB4, or CB5)
- (2) Plug the cable into the mating connector in the KSU.
- (3) At connecting block CB2 (CB3, CB4, or CB5), terminate the cable on column A from top to bottom in standard color-code order. Refer to Fig.1-4 and Table C (D, E, or F).

WIRING THE STATION SETS

1.16 Installation of the station instruments consists of providing surface- or flush-mounted four wire modular jacks, and running a four conductor station wire from the jacks to connecting block CB2 (CB3, CB4, or CB5). The station wire used shall contain two twisted pair. The procedure is as follows:

- (1) At the location of station 10, install a four-wire modular jack assembly.
- (2) Run the station wire from the modular jack of station 10 to connecting block CB2 at the MDF.
- (3) Terminate the station wire on the top four terminals of column F of CB2 in the following color-cord order: (1) green, (2) red, (3) black, (4) yellow. Refer to Fig.1-4 and Table C.
- (4) Repeat steps (1) to (3) for station 11, terminating the station wire on the next four rows of connecting block CB2 in accordance with Table C.
- (5) Continue in this fashion for stations 12 to 17, in each case using the next four rows on connecting block CB2.
- (6) Repeat these steps for stations 18 to 25. Refer to Table D.

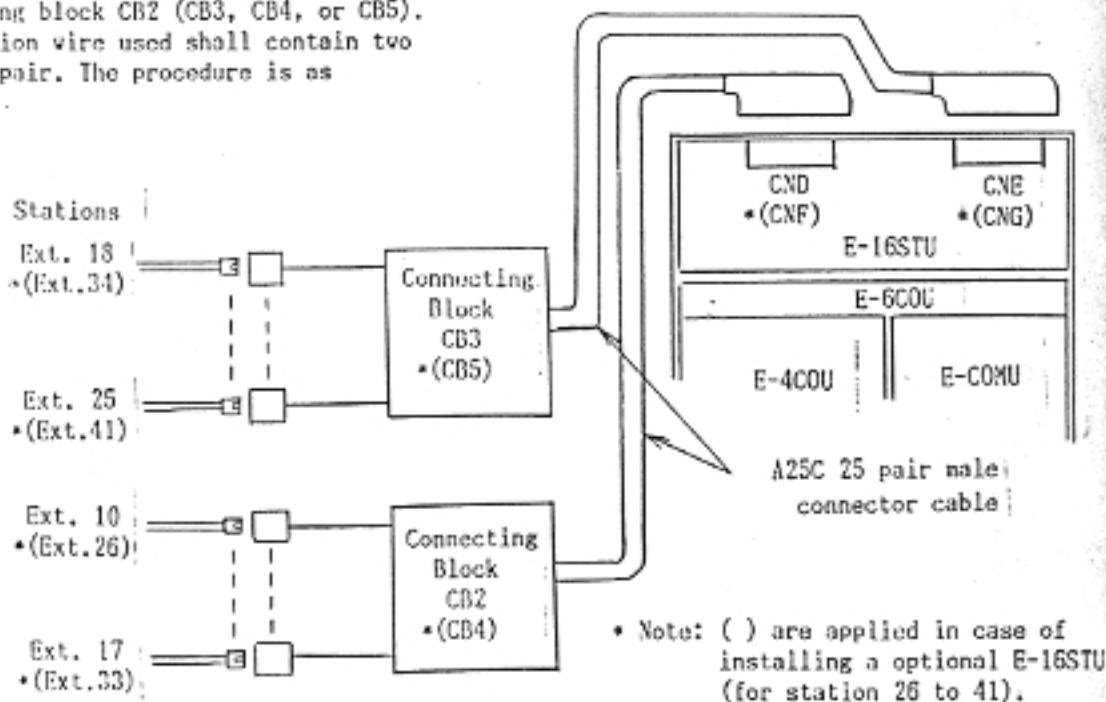


Fig.1-4 Connections for Station Lines

	A	B	C	D	E	F	
1T	W/B			1		G	10
1R	BL/W			2		R	
1TI	W/OB			3		BLK	
1RI	OR/W			4		Y	
2T	W/B			5		G	11
2R	BL/W			6		R	
2TI	W/OB			7		BLK	
2RI	OR/W			8		Y	
3T	W/B			9		G	12
3R	BL/W			10		R	
3TI	W/OB			11		BLK	
3RI	BL/R			12		Y	
4T	R/OB			13		G	13
4R	OR/R			14		R	
4TI	R/BL			15		BLK	
4RI	OR/W			16		Y	
5T	R/BL			17		G	14
5R	OR/R			18		R	
5TI	R/BL			19		BLK	
5RI	SL/R			20		Y	
6T	R/BL			21		G	15
6R	BL/R			22		R	
6TI	R/OB			23		BLK	
6RI	OR/BL			24		Y	
7T	R/BL			25		G	16
7R	OR/BL			26		R	
7TI	OR/BL			27		BLK	
7RI	OR/BL			28		Y	
8T	R/BL			29		G	17
8R	SL/BL			30		R	
8TI	T/BL			31		BLK	
8RI	BL/Y			32		Y	
9T	Y/OB			33		G	
9R	OR/Y			34		R	
9TI	Y/BL			35		BLK	
9RI	OR/Y			36		Y	
10T	Y/BL			37		G	
10R	OR/Y			38		R	
10TI	T/BL			39		BLK	
10RI	SL/Y			40		Y	
11T	Y/BL			41		G	
11R	BL/Y			42		R	
11TI	Y/OB			43		BLK	
11RI	OR/Y			44		Y	
12T	Y/BL			45		G	
12R	OR/Y			46		R	
12TI	Y/BL			47		BLK	
12RI	BL/Y			48		Y	
	Y/BL			49			
	BL/Y			50			

Fig. I-5 Layout of Connecting Block CB2

TABLE C  
CONNECTIONS FOR CONNECTING BLOCK CB 2

STATION	CONN CABLE			BLOCK CB 66-TYPE CONN BLOCK		STATION WIRE		FUNCTION
	LEAD DESIG	PIN NO.	CABLE COLOR	ROW	COLUMN	LEAD DESIG	WIRE COLOR	
10	1T	26	W-BL	1	A	T	G	Voice
	1R	1	BL-W	2		R	R	
	1T1	27	W-O	3		T1	BK	Data
	1R1	2	O-W	4		R1	Y	
11	2T	28	W-G	5		T	G	Voice
	2R	3	G-W	6		R	R	
	2T1	29	W-BR	7		T1	BK	Data
	2R1	4	BR-W	8		R1	Y	
12	3T	30	W-S	9		T	G	Voice
	3R	5	S-W	10		R	R	
	3T1	31	R-BL	11		T1	BK	Data
	3R1	6	BL-R	12		R1	Y	
13	4T	32	R-O	13		T	G	Voice
	4R	7	O-R	14		R	R	
	4T1	33	R-G	15		T1	BK	Data
	4R1	8	G-R	16		R1	Y	
14	5T	34	R-BR	17		T	G	Voice
	5R	9	BR-R	18		R	R	
	5T1	35	R-S	19		T1	BK	Data
	5R1	10	S-R	20		R1	Y	
15	6T	36	BK-BL	21		T	G	Voice
	6R	11	BL-BK	22		R	R	
	6T1	37	BK-O	23		T1	BK	Data
	6R1	12	O-BK	24		R1	Y	
16	7T	38	BK-G	25		T	G	Voice
	7R	13	G-BK	26		R	R	
	7T1	39	BK-BR	27		T1	BK	Data
	7R1	14	BR-BK	28		R1	Y	
17	8T	40	BK-S	29		T	G	Voice
	8R	15	S-BK	30		R	R	
	8T1	41	Y-BL	31		T1	BK	Data
	8R1	16	BL-Y	32		R1	Y	

TABLE D  
 CONNECTIONS FOR CONNECTING BLOCK CB3

STATION	CONN CABLE			BLOCK CB 66-TYPE CONN BLOCK		STATION WIRE		FUNCTION
	LEAD DESIG	PIN NO.	CABLE COLOR	ROW	COLUMN	LEAD DESIG	WIRE COLOR	
18	1T	26	W-BL	1	A	T	G	Voice
	1R	1	BL-W	2		R	R	
	1T1	27	W-O	3		T1	BK	Data
	1R1	2	O-W	4		R1	Y	
19	2T	28	W-G	5		T	G	Voice
	2R	3	G-W	6		R	R	
	2T1	29	W-BR	7		T1	BK	Data
	2R1	4	BR-W	8		R1	Y	
20	3T	30	W-S	9		T	G	Voice
	3R	5	S-W	10		R	R	
	3T1	31	R-BL	11		T1	BK	Data
	3R1	6	BL-R	12		R1	Y	
21	4T	32	R-O	13		T	G	Voice
	4R	7	O-R	14		R	R	
	4T1	33	R-G	15		T1	BK	Data
	4R1	8	G-R	16		R1	Y	
22	5T	34	R-BR	17		T	G	Voice
	5R	9	BR-R	18		R	R	
	5T1	35	R-S	19		T1	BK	Data
	5R1	10	S-R	20		R1	Y	
23	6T	36	BK-BL	21		T	G	Voice
	6R	11	BL-BK	22		R	R	
	6T1	37	BK-O	23		T1	BK	Data
	6R1	12	O-BK	24		R1	Y	
24	7T	38	BK-G	25		T	G	Voice
	7R	13	G-BK	26		R	R	
	7T1	39	BK-BR	27		T1	BK	Data
	7R1	14	BR-BK	28		R1	Y	
25	8T	40	BK-S	29		T	G	Voice
	8R	15	S-BK	30		R	R	
	8T1	41	Y-BL	31		T1	BK	Data
	8R1	16	BL-Y	32		R1	Y	

TABLE E  
 CONNECTIONS FOR CONNECTING BLOCK CB4

STATION	CONN CABLE			BLOCK CB 66-TYPE CONN BLOCK		STATION WIRE		FUNCTION
	LEAD DESIG	PIN NO.	CABLE COLOR	ROW	COLUMN	LEAD DESIG	WIRE COLOR	
26	1T	26	W-BL	1	A	T	G	Voice
	1R	1	BL-W	2		R	R	
	1T1	27	W-O	3		T1	BK	Data
	1R1	2	O-W	4		R1	Y	
27	2T	28	W-G	5		T	G	Voice
	2R	3	G-W	6		R	R	
	2T1	29	W-BR	7		T1	BK	Data
	2R1	4	BR-W	8		R1	Y	
28	3T	30	W-S	9		T	G	Voice
	3R	5	S-W	10		R	R	
	3T1	31	R-BL	11		T1	BK	Data
	3R1	6	BL-R	12		R1	Y	
29	4T	32	R-O	13		T	G	Voice
	4R	7	O-R	14		R	R	
	4T1	33	R-G	15		T1	BK	Data
	4R1	8	G-R	16		R1	Y	
30	5T	34	R-BR	17		T	G	Voice
	5R	9	BR-R	18		R	R	
	5T1	35	R-S	19		T1	BK	Data
	5R1	10	S-R	20		R1	Y	
31	6T	36	BK-BL	21		T	G	Voice
	6R	11	BL-BK	22		R	R	
	6T1	37	BK-O	23		T1	BK	Data
	6R1	12	O-BK	24		R1	Y	
32	7T	38	BK-G	25		T	G	Voice
	7R	13	G-BK	26		R	R	
	7T1	39	BK-BR	27		T1	BK	Data
	7R1	14	BR-BK	28		R1	Y	
33	8T	40	BK-S	29		T	G	Voice
	8R	15	S-BK	30		R	R	
	8T1	41	Y-BL	31		T1	BK	Data
	8R1	16	BL-Y	32		R1	Y	



TABLE F  
 CONNECTIONS FOR CONNECTING BLOCK CB5

STATION	CONN CABLE			BLOCK CB 66-TYPE CONN BLOCK		STATION WIRE		FUNCTION
	LEAD DESIG	PIN NO.	CABLE COLOR	ROW	COLUMN	LEAD DESIG	WIRE COLOR	
34	1T	26	W-BL	1	A	T	G	Voice
	1R	1	BL-W	2		R	R	
	1T1	27	W-O	3		T1	BK	Data
	1R1	2	O-W	4		R1	Y	
35	2T	28	W-G	5		T	G	Voice
	2R	3	G-W	6		R	R	
	2T1	29	W-BR	7		T1	BK	Data
	2R1	4	BR-W	8		R1	Y	
36	3T	30	W-S	9		T	G	Voice
	3R	5	S-W	10		R	R	
	3T1	31	R-BL	11		T1	BK	Data
	3R1	6	BL-R	12		R1	Y	
37	4T	32	R-O	13		T	G	Voice
	4R	7	O-R	14		R	R	
	4T1	33	R-G	15		T1	BK	Data
	4R1	8	G-R	16		R1	Y	
38	5T	34	R-BR	17		T	G	Voice
	5R	9	BR-R	18		R	R	
	5T1	35	R-S	19		T1	BK	Data
	5R1	10	S-R	20		R1	Y	
39	6T	36	BK-BL	21		T	G	Voice
	6R	11	BL-BK	22		R	R	
	6T1	37	BK-O	23		T1	BK	Data
	6R1	12	O-BK	24		R1	Y	
40	7T	38	BK-G	25		T	G	Voice
	7R	13	G-BK	26		R	R	
	7T1	39	BK-BR	27		T1	BK	Data
	7R1	14	BR-BK	28		R1	Y	
41	8T	40	BK-S	29		T	G	Voice
	8R	15	S-BK	30		R	R	
	8T1	41	Y-BL	31		T1	BK	Data
	8R1	16	BL-Y	32		R1	Y	

## SECTION 1032-01

### INSTALLING THE ADJUSTABLE BRACKET

1.17 When mounted on a desk, the HMS-1032EE instrument can be tilted toward the user, if desired, by installing an adjustable bracket to the bottom of the instrument. The bracket is installed as follows:

- (1) Unplug the line cord from the modular jack.
- (2) Turn the telephone set over and lay it face down on the desk.
- (3) Place the bare side of the bracket in the groove.
- (4) Fasten the bracket to the base of the set with the self-tapping screw.

### WALL MOUNTING TELEPHONE SET

1.18 An HMS-1032EE key telephone instrument can be converted from desk to wall mounting with WMK wall mounting kit. The set may be mounted directly to the wall or to a flush-mounted modular jack, if provided. To convert a telephone set to wall mounting, proceed as follows:

- (1) Plug the adapter cord provided with the kit into the modular wall jack only if the set is to mount directly to a jack assembly. Otherwise discard the adapter cord and proceed to step(7).
- (2) Holding the wall-mounting bracket close to the wall, run the free end of the adapter cord through the opening in the center of the bracket and out the opening in the top.
- (3) Secure the bracket to the modular assembly.
- (4) Fasten the wall-mounting bracket to the wall using the four wood screws provided.

(5) Place the telephone set on the wall-mounting bracket so that the two upper tabs of the bracket enter the two upper slots in the base of the telephone.

(6) Push the lower part of the telephone set against the bracket so that the lower two tabs snap into place in the lower two slots in the telephone.

(7) If the set is mounted directly to a jack assembly, discard the existing line cord and plug the adaptor cord into the telephone set in its place. Otherwise plug the existing line cord into the nearest modular jack assembly.

Note: A handset hook is already provided on the telephone set.

### CONNECTING A LOUD BELL

1.19 If a loud bell is provided, it can be connected to the HMS-1032EE key telephone system. Terminals 47 and 48 of the connecting block CBI (Table B) will provide a dry contact closure synchronizing with incoming signals of the C.O. lines. The dry contact closure can be programmed to provide closure for any or all incoming C.O. lines. It can also be programmed for day ring, night ring, or both.

Caution: Maximum current allowed through the dry contact closure is 0.1 AMP.

### CONNECTING A DRY CONTACT

1.20 A dry contact closure will be provided with terminals 49 and 50 of the connecting block CBI (Table B). Any stations can close or open this closure by programming.

## INSTALLATING THE E-16STU CARD

1.21 To expand the system up to 32 extensions, an optional E-16STU card must be added to the KSU. This card is installed as follows in accordance with Fig.1-6.

- (1) Unplug the AC cord from the AC receptacle.
- (2) Unfasten 4 screws from a basic E-16STU card.
- (3) Insert 4 stand-offs and 2 spacers furnished into holes on a basic E-16STU card.

- (4) Insert one end of two flat cables furnished into the connector "CNM" on the E-COMU card and the connector "CNY" on the E-6COU card.

- (5) Mount an optional E-16STU card and fasten it with 4 screws which were unfastened from a basic E-16STU card.

- (6) Insert the other end of the flat cables into the connector "CNY" and "CNM" on the optional E-16STU card.

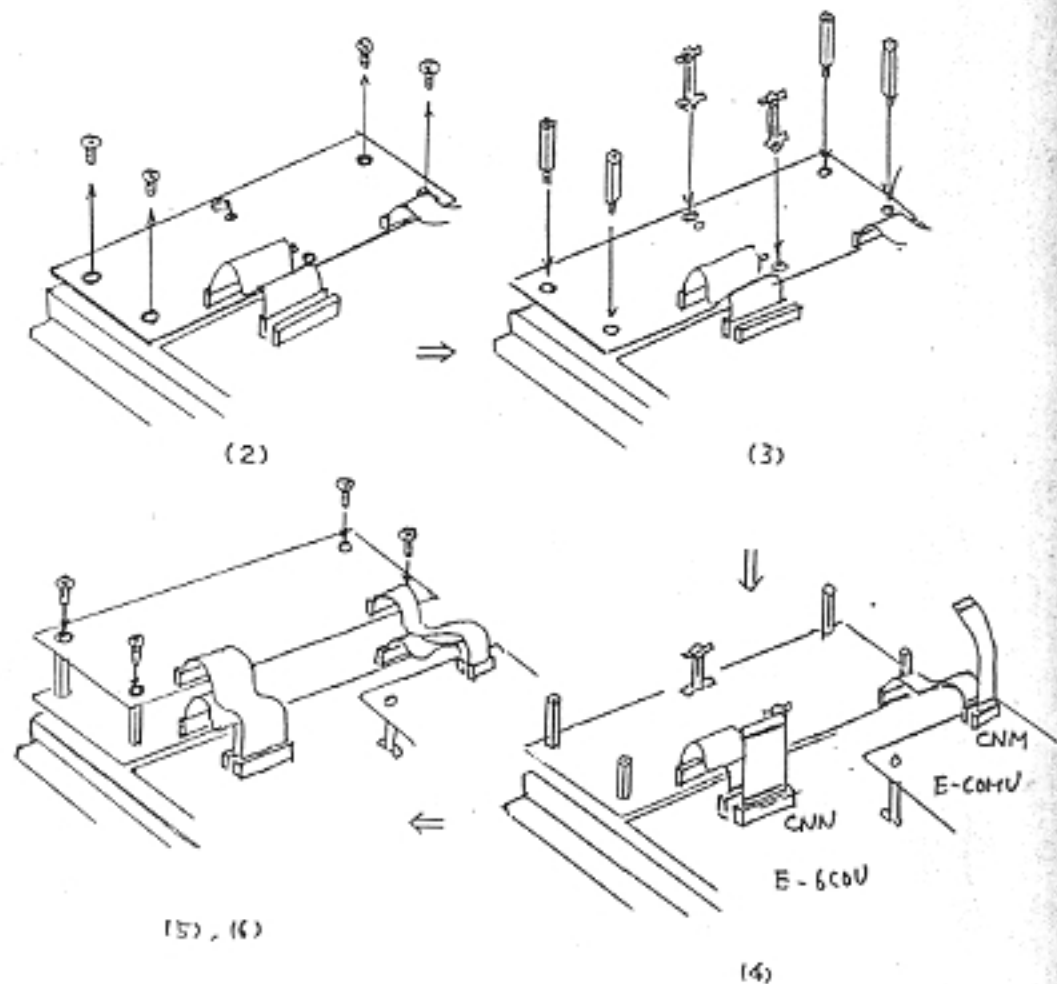


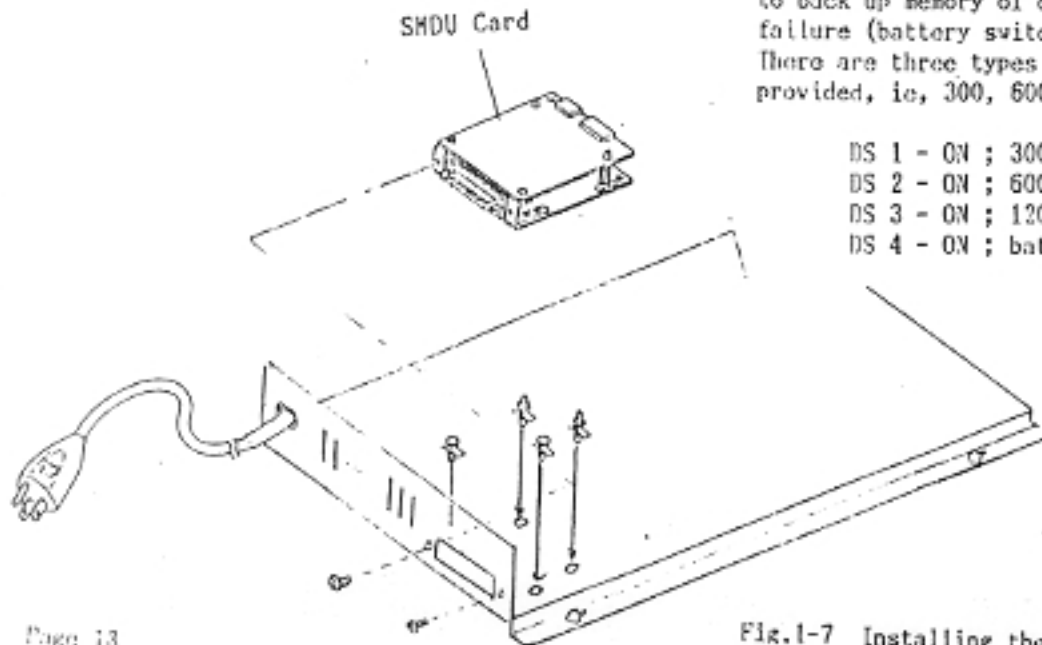
Fig.1-6 Installing the E-16STU Card

SECTION 1032-01

INSTALLING THE SMDU CARD

1.22 The optional SMDU Interface card SMDU provides the interface for connecting a customer provided printer to the KSU. It will provide data station message detail recording.

- (1) Unplug the power cord from the ac receptacle.
- (2) Discharge any static electricity on your person by touching the KSU backplate, if properly grounded.
- (3) Refer to Fig.1-7 Insert two kinds of spacers on its position to the KSU.
- (4) Peel off the sheel on the base at SMDU location.
- (5) Set the dip-switch DS as referring to section 1.21.
- (6) Locate the assigned position of SMDU cards.
- (7) Fasten the SMDU cards by screwing two screws as shown in Fig.1-7.
- (8) Insert the flat ribbon cable into connector "CNR" on the SMDU cards with conductor side of the cable facing the connector contacts.
- (9) Insert the other end of the flat ribbon cable into connector "CNR" on the E-COMU card.



CONNECTING THE PRINTER

1.23 The SMDU cards is equipped with an RS232C connector to permit the attachment of a printer. The printers listed below are required other models can not be connected to this system.

- a. OKIDATA Model : LM-182
- b. EPSON Model : FX-85

The following characteristic about the data output from the SMDU should by observed.

- 1) 7-bit format ASCII code
- 2) One start bit
- 3) Non-parity
- 4) Two stop bits

Fig.1-8 shows the detailed connections for the printers listed above. Other pins must not be connected.

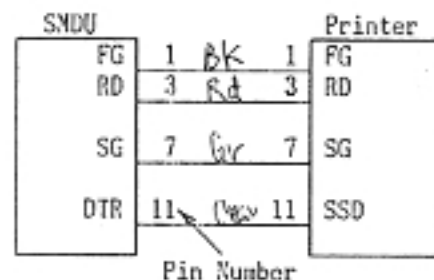


Fig. 1-8 Connecting SMDU and printer

1.24 Before installing the SMDU cards, the dip-switch DS must be set to select the speed of print (bit/sec.) and to back up memory of clock during power failure (battery switch). There are three types of b/s are provided, ie, 300, 600, 1200.

- DS 1 - ON ; 300 b/s
- DS 2 - ON ; 600 b/s
- DS 3 - ON ; 1200 b/s
- DS 4 - ON ; battery switch on

Fig.1-7 Installing the SMDU Card

## INSTALLING THE DOOR BOXES

1.25 A maximum of two door boxes can be installed instead of C.O. line No.10. It is possible to identify the door box from which the call is placed by distinctive chime. Using one of the two door boxes installed, it is possible to call the room from any telephone set. The door box connected to the terminals "DH1" in the DPIU BOX allows this service. The following additional materials are required:

- B25A2M-4 four-wire surface-mounted modular jack assembly
- Two twisted pair cable
- One pair cable

1.26 DPIU BOX and door boxes are installed and wired as follows:

- (1) Unplug the power cord from the ac receptacle.
- (2) Disconnect the CO line No.10.
- (3) Remove the cover of DPIU BOX.
- (4) Mount the DPIU BOX on the plywood backboard.

(5) Mount the modular jack assembly between the connecting block CBI to the KSU.

(6) Run the two two twisted pair cable from the modular jack assemblies of the step(5) to the connecting block CBI.

(7) Terminate one end of the two twisted cable on the jack assemblies and the other end of it on the connecting block CBI in accordance with Fig.1-9.

(8) Connect jack CNJ in the KSU, which is labeled "PFU" in the lefthand of the KSU, with jack CNJ on the DPIU BOX, using the two-conductor modular power cord furnished with the unit. If the power failure transfer units were provided, connect jack CNK on the PFU with jack CNJ on the DPIU BOX using the power cord.

(9) Connect the one pair cord between terminals DH1 or DH2 in the DPIU BOX and door boxes.

DH1 - 1st Door box  
DH2 - 2nd Door box

Note: Connect to terminals "DH1" on the DPIU BOX allows a station to access the DOOR BOX.

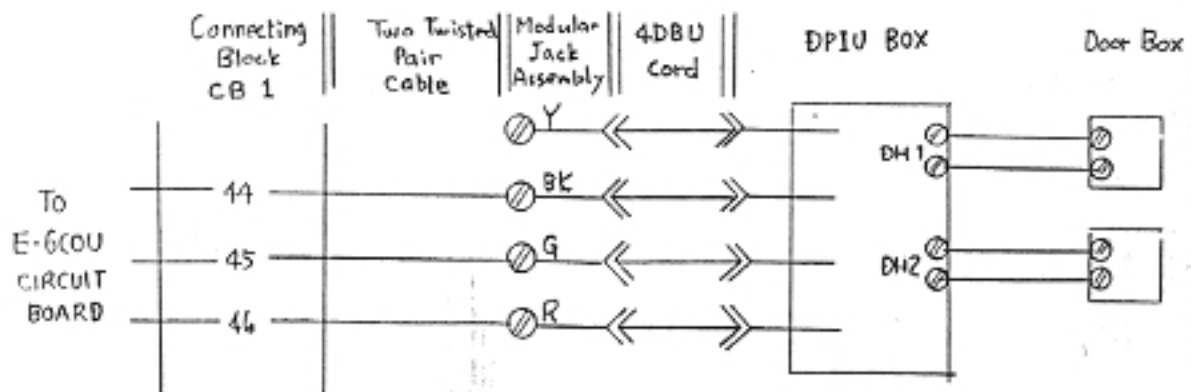


Fig.1-9 Connections for the Door Boxes

## SECTION 1032-01

### CONNECTING AN EXTERNAL MUSIC SOURCE

1.26 If an external music source is available, it can be connected to the KSU as follows:

- (1) Unplug the power cord from the ac receptacle.
- (2) Connect customer provided music source and the KSU, using mini-jack ended 1-pair cord.

Note: The input level of the external music source shall be adjusted for 100mV.

### CONNECTING AN EXTERNAL PAGING SYSTEM

1.27 If an external paging system is provided, station users can gain access by dialing INT plus 59 on their telephone instruments. (See User's Guide for complete instructions.) The key system is connected to the paging system as follows:

- (1) Unplug the power cord from the ac receptacle.
- (2) Connect customer provided paging system and the KSU, using mini-jack ended 1-pair cord.

Note: The output impedance of the KSU across the PAGING OUT terminals is 500 ohms and the level of the output signal is 200mV.

### COMPLETING THE INSTALLATION

1.28 Prior to perming the programming or turning the system up for service, review the installation as follows:

- (1) Carefully check the connections at the connecting blocks and modular jack assemblies to ensure that all connections were performed and to the proper locations.
- (2) Check that no wires are broken at the connecting blocks and modular jack assemblies to ensure that all connections were performed and to the proper locations.
- (3) Check that no wires are broken at the terminals or touching adjacent terminals.

- (4) Check the flat ribbon cables to ensure they are firmly in the connectors, conductor-side facing the contacts, and that the boards are correctly interconnected.

- (5) Check that the KSU has been properly grounded.

- (6) Plug the KSU power cord into the ac outlet.

- (7) Check that power is supplied to the KSU by observing that E-CONU's LED flashes.

- (8) Power the printer for SMDR. You should supply KSU with the power before the printer.

### SYSTEM RESET

1.29 Improper operation of the system by one or several station users may cause several stations or the entire system to lock up. Operation of the RESET button on the E-CONU card will reset the system and clear the problem. Caution should be exercised to ensure that no conversations are in progress when pressing the RESET button. Any such conversations will be disconnected.

### WIRING CHECK

1.30 When installing the HMS-1032EE system you can use a 1032EE DSS/BLF telephone to check the status of the connection between the KSU and each station.

- (1) Plug power cord into a dedicated ac outlet.

- (2) At any DSS/BLF telephone set, press FEAT key and dial 0 plus . Observe the BLF lamps on the DSS/BLF console.

-- A steady lamp indicates ;  
A station which is properly connected.

-- A flashing lamp indicates ;  
A station that is not connected properly or not connected at all (vacant).

- (3) Press  (or any other key) in order to return to normal operation.

Note: Please allow 5 or 6 seconds for this to occur.

## 2. FEATURE PROGRAMMING

## CUSTOMER-PROGRAMMED FEATURES

2.01 The EXTROM™HMS-612EE Electronic Key Telephone System contains a variety of advanced features to enhance the calling process and make telephone communications more efficient. Some of these features are programmed by each station user, some by only one user, and others are programmed by the installer during installation.

2.02 The only features programmed by station users are station and system speed dialing. For station speed dialing, each station user must program his or her own repertories of ten abbreviated dialing codes. In addition, the user at station 10 must program the 70 abbreviated dialing codes of the system speed dialing feature. These codes are then available to all extensions. Instructions for programming these two features are described in the HMS-612EE User's Guide.

## INSTALLER-PROGRAMMED FEATURES

2.03 At the time of installation, the installer consults with the customer to determine which features are desired and to which stations. He/She then performs the necessary programming at the KSU and station 10. Should the customer's requirements change at a later date, the installer must return to the premises and reprogram the affected features.

2.04 The following is a list of the installer programmed features and the various choices available with each:

- (1) Hold Recall Interval: User is reminded of calls kept on hold for more than a preset time interval. (one, two, three minutes, or no hold recall)
- (2) Loud Bell Night Transfer: To designate whether the customer provided loud bell rings during night transfer or not.
- (3) Pulse Make Ratio: Make ratio is 33% or 40% for Rotary C.O. lines only.
- (4) Pulse Rate: 20pps or 10pps for Rotary C.O. lines only.
- (5) Inter Digit Pause: Break interval between rotary digits dialed (500ms, 700ms, 800ms, or 1100ms). For rotary C.O. lines only.
- (6) DTMF Tone Interval: Duration of DTMF tones sent on tone C.O. lines.
- (7) Flash/Recall: Program FLASH for accessing PBX features requiring a "HOOKFLASH". Program RECALL for use behind a Central Office for reseizing dial tone.
- (8) PBX Pause Number: If one or more of the one digit PBX access numbers (0, 7, 8, 9) are programmed, a pause will automatically follow the number(s) when registered as the first digit of a speed-dial number.
- (9) Rotary/Tone By Line: Select either ROTARY or TONE for each line used.
- (10) C.O. Line/PABX Line: Select by line, if used behind a PBX or a Central Office.
- (11) Outgoing Call Restriction by Line: Restrict all outgoing calls one or more lines. Incoming and internal calls will be allowed only. NOTE: Line(s) will be restricted on all phones.
- (12) Loud Bell Ring Assignment: To designate whether the customer provided loud bell rings or not on incoming calls. Programmable on a per line basis.
- (13) Master Station Number: To designate which one station is able to access special features such as Night Transfer, Programming system speed-dial numbers, and setting the date/time for the optional SMOR feature. NOTE: System programming can only be accessed by station set 10 regardless of master station assignment.
- (14) Pause Interval: The duration of the "Programmable Pause" used in speed-dialing can be set from one to fifteen seconds. NOTE: Pause can be linked together in speed dial memory.

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- (15) Flash/Recall Interval: Duration of the "loop open" condition during a Flash/Recall.
- (16) Timing of Call for SNDR: Program the time interval allowed to pass before the SNDR will begin timing a call. This will allow time for dialing and for a connection to be made.
- (17) Digit Timer for SNDR: Program the length of time the KSU will wait between digits before recording a "Number Dialed" for the SMDL.
- (18) Flexible Ringing Assignment: Designates which stations will and will not ring during normal operation. Programmable on a per station / per line basis.
- (19) Outgoing Call Restriction by Station: Programmable on a per station basis. Four classes.
- A - Non Restricted.
  - B - Toll Restricted.\*
  - C - Outgoing call restricted.
  - D - Outgoing call restricted except a common speed dialing.
- \* See Table H.
- (20) Night Transfer: Designates which stations provide an audible signal on incoming calls after night transfer is activated.
- (21) Automatic Incoming C.O. Access: Designates which stations will access an Incoming C.O. line automatically.
- (22) Access Dry Contact: Designates which stations will access a dry contact closure.
- (23) Executive Override: Designates which stations will access busy C.O. line.
- (24) Executive C.O. Line from Automatic Access: Designates which C.O. lines will be excluded from automatic access.
- (25) Tenant Group Assignment: Assigns station to one of 12 tenant groups if required. (Tenant groups are defined in feature numbers 25 and 26 below.)
- (26) Zone Page Group: In addition to all call page. Up to eight paging zones can be assigned.
- (27) Number of Digits Allowed: Class "B" restriction can be programmed to allow 1-15 digits. (See feature No.19.)
- (28) Restricted 3 digit sequences: Class "B" restriction can also be programmed to deny ten 3-digit prefixes (Exchanges or area codes depending on digits allowed in feature 19.)
- (30) Tenant Group Line Designation: Designating which C.O. lines can or cannot be accessed by each tenant group.
- (31) Tenant Group Restriction: Defining type of restriction (If any) on a phone assigned to a tenant group.
- Note: Same restriction will apply to all groups.  
Restrictions available are:
- 1) Cannot access lines.
  - 2) Can access incoming calls and calls on hold only.
  - 3) can access calls on hold only.
  - 4) No restriction.
- (32) Perpause Time for Automatic C.O. Access: The duration of the "Programmable Pause" used in automatic C.O. access (Including an automatic speed dialing) can be set from one to fifteen seconds.



## PRECAUTIONS

2.05 Should the commercial ac supply suffer a power failure, the programming memory is protected against erasure by lithium battery mounted on the E-COMU card. UNDER NORMAL OPERATING CONDITIONS, THE LIFE OF THE BATTERY IS TEN YEARS.

Note: Should the KSU be removed from service and the battery left connected, battery life could be reduced to as little as 90 days.

2.06 The battery is connected to the circuitry via a miniature slide switch (BS) on the E-COMU card. If the miniature slide switch is in the OFF position, the battery is disconnected. If it is in the ON position, the battery is connected. To prevent reducing the life of the battery prematurely, the following precautions should be observed:

- (1) Upon removing the KSU from service, preparing it for shipment, or during a period of non-use, make sure the miniature slide switch is in the OFF position.
- (2) Prior to programming any features, make sure the BS switch is in the ON position.
- (3) After programming is completed, the BS switch must be left in the ON position, for as long as the KSU is in the service.

## PLACING THE SYSTEM IN PROGRAMMING MODE

2.07 The following steps are performed to place the system in the programming mode.

Note: WHILE IN THIS MODE, CALLS CAN NOT BE PLACED OR RECEIVED. If the system is being programmed for the first time after installation, perform all the steps listed below.

- (1) Make sure the ac power cord is plugged into the ac receptacle.
- (2) Make sure station set 10 is connected.

(3) On station set 10, press FEAT key, dial 0, 9, \* press HOLD key, (FEAT 0 9 \* HOLD) and wait for the MUTE LED to flash. (Approx. 4 seconds)

(4) Program each feature, one after the other, in accordance with the following paragraphs.

## PROGRAMMING THE FEATURE

2.08 Once the system is in programming mode, the actual programming is performed at station 10. Programming consists of keying the access code for the desired feature, and then pressing the proper combination of line, intercom keys or two digit code on the dial pad to light the required LEDs. The same access code may be assigned to several features. All features using the same code may be programmed at the same time without rekeying the code. After programming each particular ACCESS CODE, the HOLD key must be pressed briefly in order to register the desired features.

2.09 To program each feature, refer to Table G and make a list of the features to be programmed and the options desired for each. Then proceed as follows:

- (1) Key the four digit ACCESS CODE of the first feature on the keypad of station 10. When pressing the first digit of the ACCESS CODE, the MUTE LED changes to slow flashing, and when pressing the fourth digit the MUTE LED is extinguished.
- (2) Observe the keystick. The lighted LEDs indicate how that feature is presently programmed.
- (3) To program the feature for the desired option, refer to Table G and determine which LEDs should be lighted and which should be extinguished.
- (4) To light an LED, press the associated line or intercom button or 2-digit ACCESS DIAL briefly.

## SECTION 1032-02

(5) To extinguish an LED, press the associated line or intercom button or 2-digit ACCESS DIAL briefly.

(6) Repeat steps 4 or 5 until the desired combination of LEDs is lit and all others are dark.

(7) Repeat steps (3) through (6) for other features using the same ACCESS CODE.

(8) After programming for a particular ACCESS CODE is completed, press the HOLD key briefly. The LEDs extinguish. The MUTE LED flashes.

Note: The HOLD key must be pressed in order to register each ACCESS CODE in memory.

(9) To program the next feature refer to Table G to determine the correct ACCESS CODE and repeat steps (1) to (8).

Note: Make sure that the MUTE LED is flashing before entering a new ACCESS CODE. If it is not flashing make sure that the HOLD key has been pressed in order to insure that the last ACCESS CODE programmed has been registered in memory.

### TAKING THE SYSTEM OUT OF PROGRAMMING MODE

2.10 To restore the system to operating mode after all programming is complete, proceed as follows:

(1) At station set 10 press the HOLD key briefly to make sure that your last entry has been registered. The MUTE LED flashes.

(2) Dial 9, 0, 9, 0. The MUTE LED extinguishes. The system is now operational.

(3) Check the operation of the system to ensure that each feature, each C.O. line, and each station has been properly programmed.

### CLEARING THE PROGRAMMED FEATURES AND DIAL NUMBERS

2.11 To clear the all programmed features and speed dial numbers, proceed as follows:

(1) Refer to section 2.07 and place the system in programming mode.

(2) At station set 10, dial 9, 0, 0, 0. Programmed features and speed dial numbers are now cleared.

(3) Refer to section 2.10 and take the system out of programming mode.

### CLEARING THE PROGRAMMED FEATURES

2.12 To clear the all programmed features, proceed as follows:

(1) Refer to section 2.07 and place the system in programming mode.

(2) At station set 10, dial 9, 0, 0, 1. Programmed features are now cleared.

(3) Refer to section 2.10 and take the system out of programming mode.

Table G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS KEY	※LIGHTED LEDs				SET AT FACTORY		
					C01	C02	C03	INT			
1	Hold Recall Interval	0000	None	-	-	-	-	-			
			1 min.	C01	○	-	-	-			
			2 min.	C02	-	○	-	-			
			3 min.	C01,2	○	○	-	-	○		
2	Loud Bell Ring DAY/NIGHT		Day	Ring	C03	-	-	○	○		
				No	-	-	-	-			
			Night	Ring	INT	-	-	-	○	○	
				No	-	-	-	-	-		
3	[Make Ratio] ROTARY CO ONLY	0010	33%	C01	○	-	-	-			
			40%	-	-	-	-	○			
			4	[Pulse Rate] ROTARY CO ONLY	20pps	C02	-	○	-	-	
					10pps	-	-	-	-	○	
5	[Inter Digit Pause] ROTARY CO ONLY		800ns	-	-	-	-	○			
			1100ns	C03	-	-	○	-			
			700ns	INT	-	-	-	○			
			500ns	C03, INT	-	-	○	○			
6	DEM Outputting Ratio	0011	55ns	C01	○	-	-	-			
			75ns	-	-	-	-	○			
7	Flash/Recall		Flash (PABX)	C02	-	○	-	-			
			Recall (C.O.)	-	-	-	-	○			
8	PBX Access Code for CO Lines	0020	None	-	-	-	-	-	○		
			7	C01	○	-	-	-			
			3	C02	-	○	-	-			
			9	C03	-	-	○	-			
			0	INT	-	-	-	○			
9	[Pulse or Tone by Line] ROTARY CO ONLY	→5XX0	Tone	-	-	-	-	○			
			Pulse	C01	○	-	-	-			
10	CO Line or PABX by line		CO Line	-	-	-	-	○			
			PABX	C02	-	○	-	-			
11	Outgoing Call Restriction by Line		Nonrestricted	-	-	-	-	○			
			Restricted	C03	-	-	○	-			
12	Loud Bell Ringing Assignment		Rings	INT	-	-	-	○	○		
			Does Not Ring	-	-	-	-	-			

Table G FEATURE PROGRAMMING

No.	FEATURE	OPTION	ACCESS CODE	ACCESS DIAL	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
13	Master Station Number  (Master station is able to access features such as Night transfer, Speed dial numbers, External DGM, and setting the date/time for the SMP3 feature.)	STA# 10	0040	00	-	-	-	-	☉
		STA# 11		01	☉	-	-	-	
		STA# 12		02	-	☉	-	-	
		STA# 13		03	☉	☉	-	-	
		STA# 14		04	-	-	☉	-	
		STA# 15		05	☉	-	☉	-	
		STA# 16		06	-	☉	☉	-	
		STA# 17		07	☉	☉	☉	-	
		STA# 18		08	-	-	-	☉	
		STA# 19		09	☉	-	-	☉	
		STA# 20		10	-	☉	-	☉	
		STA# 21		11	☉	☉	-	☉	
		STA# 22		12	-	-	☉	☉	
		STA# 23		13	☉	-	☉	☉	
		STA# 24		14	-	☉	☉	☉	
		STA# 25	15	☉	☉	☉	☉		
		STA# 26	0041	00	-	-	-	-	
		STA# 27		01	☉	-	-	-	
		STA# 28		02	-	☉	-	-	
		STA# 29		03	☉	☉	-	-	
		STA# 30		04	-	-	☉	-	
		STA# 31		05	☉	-	☉	-	
		STA# 32		06	-	☉	☉	-	
		STA# 33		07	☉	☉	☉	-	
		STA# 34		08	-	-	-	☉	
		STA# 35		09	☉	-	-	☉	
		STA# 36		10	-	☉	-	☉	
		STA# 37		11	☉	☉	-	☉	
		STA# 38		12	-	-	☉	☉	
		STA# 39		13	☉	-	☉	☉	
		STA# 40		14	-	☉	☉	☉	
		STA# 41		15	☉	☉	☉	☉	

## Legend:

- ⊗ Indicator lamp will turn on when pressing desired key.
- ↔ Replace XX with Line Number of CO Line being programmed (01-06).
- 7 Do not press Feature keys. Lighted LEDs will indicate when pressing ACCESS DIAL.
- ☉ Corresponding LED should be "ON" for this feature.
- Corresponding LED should be "OFF" for this feature.

Table G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
14	Pause Interval (for speed dial)	0050	(1 sec.)	00	-	-	-	-	
			1 sec.	01	○	-	-	-	
			2 sec.	02	-	○	-	-	
			3 sec.	03	○	○	-	-	○
			4 sec.	04	-	-	○	-	
			5 sec.	05	○	-	○	-	
			6 sec.	06	-	○	○	-	
			7 sec.	07	○	○	○	-	
			8 sec.	08	-	-	-	○	
			9 sec.	09	○	-	-	○	
			10 sec.	10	-	○	-	○	
			11 sec.	11	○	○	-	○	
			12 sec.	12	-	-	○	○	
			13 sec.	13	○	-	○	○	
			14 sec.	14	-	○	○	○	
15 sec.	15	○	○	○	○				
15	Flash/Recall Interval	0060	20 ms	00	-	-	-	-	
			40 ms	01	○	-	-	-	
			60 ms	02	-	○	-	-	
			80 ms	03	○	○	-	-	
			100 ms	04	-	-	○	-	
			200 ms	05	○	-	○	-	
			300 ms	06	-	○	○	-	
			400 ms	07	○	○	○	-	
			500 ms	08	-	-	-	○	
			600 ms	09	○	-	-	○	
			700 ms	10	-	○	-	○	
			800 ms	11	○	○	-	○	
			900 ms	12	-	-	○	○	
			1000 ms	13	○	-	○	○	○
			2000 ms	14	-	○	○	○	
3000 ms	15	○	○	○	○				

TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
16	Timing of Call for SMDR	0061	1 sec.	00	-	-	-	-	
			5 sec.	01	⊙	-	-	-	⊙
			9 sec.	02	-	⊙	-	-	
			13 sec.	03	⊙	⊙	-	-	
			17 sec.	04	-	-	⊙	-	
			21 sec.	05	⊙	-	⊙	-	
			25 sec.	06	-	⊙	⊙	-	
			29 sec.	07	⊙	⊙	⊙	-	
			33 sec.	08	-	-	-	⊙	
			37 sec.	09	⊙	-	-	⊙	
			41 sec.	10	-	⊙	-	⊙	
			45 sec.	11	⊙	⊙	-	⊙	
			49 sec.	12	-	-	⊙	⊙	
			53 sec.	13	⊙	-	⊙	⊙	
			57 sec.	14	-	⊙	⊙	⊙	
61 sec.	15	⊙	⊙	⊙	⊙				

## NOTE: Timing of call for SMDR

Timing of call refers to a pre-programmed time delay between dialing out and the answer of the C.O. call by the outside party. This does not detect the outside party picking up. It only delays the start of the SMDR times. This feature is preset at the factory for 5 seconds.

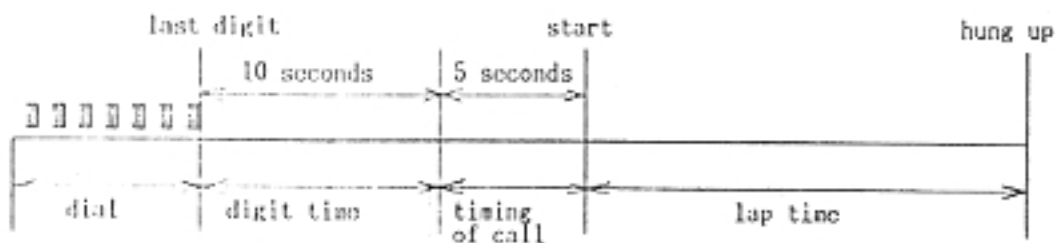
TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
17	Digit timer for SMDR	0070	1 sec.	00	-	-	-	-	
			2 sec.	01	○	-	-	-	
			3 sec.	02	-	○	-	-	
			4 sec.	03	○	○	-	-	
			5 sec.	04	-	-	○	-	
			6 sec.	05	○	-	○	-	
			7 sec.	06	-	○	○	-	
			8 sec.	07	○	○	○	-	
			9 sec.	08	-	-	-	○	
			10 sec.	09	○	-	-	○	○
			11 sec.	10	-	○	-	○	
			12 sec.	11	○	○	-	○	
			13 sec.	12	-	-	○	○	
			14 sec.	13	○	-	○	○	
			15 sec.	14	-	○	○	○	
			16 sec.	15	○	○	○	○	

NOTE: Digit timer means; Interval time of dialing for SMDR. It must be required to dial within programmed digit time.

If dialed exceeds the programmed digit time, lap time is started before dialing is completed. This feature preset at factory for 10 seconds.

Printed out "lap time" is added to digit time and timing of call as shown in chart below.



## SECTION 1032-02

NOTE: SMDR recording format

## a) Outgoing format

05-19 02:13P 00:01:15 S012 000 11223344556677889900112233 001 A0001  
 [Date] [Time] [Laptime] [Station No.] [Incoming use only] [Dial No.] [CO line No.] [Account  
 code]

## b) Incoming format

05-19 11:50A 00:00:11 005 005 S010 A0003  
 [Date] [Time] [Laptime] [CO line No.] [Incoming time] [Station No.] [Account code]  
 [till answer]

TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS KEY	*LIGHTED LEDs				SET AT FACTORY		
					CO1	CO2	CO3	INT			
18	Flexible Ringing Assignment **	☐ 2YY0	Line 1	Rings	CO1	○					
				No	-	-				○	
			Line 2	Rings	CO2		○				
				No	-	-					○
			Line 3	Rings	CO3			○			
				No	-	-					○
			Line 4	Rings	INT				○		
				No	-	-				-	○
		☐ 2YY1	Line 5	Rings	CO1	○					
				No	-	-					○
			Line 6	Rings	CO2		○				
				No	-	-					○
			Line 7	Rings	CO3			○			
				No	-	-					○
☐ 2YY2	Line 8	Rings	INT				○				
		No	-	-				-	○		
	Line 9	Rings	CO1	○							
		No	-	-					○		
	Line 10	Rings	CO2		○						
		No	-	-					○		

☐ Replace YY with extension number of station being programmed.

\*\*Station 10 is programmed at factory to all line ringing of flexible ringing assignment.



TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS KEY	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
19	Out Going Call Restriction by Stations	1YY1	Class A	-	-	-			○
			Class B	C01	○	-			
			Class C	C02	-	○			
			Class D	C01,C02	○	○			
20	Night Transfer	4YY0	Yes	C01	○				
			No	-	-				○
21	Automatic Incoming CO Access	4YY0	Yes	C02		○			
			No	-	-				○
22	Access Dry Contact	4YY0	Yes	C03			○		
			No	-	-				○
23	Executive Override	4YY0	Yes	INT				○	
			No	-	-			-	○
24	Exclusive CO Line from Automatic Access	0021	Line 1 Excluded	C01	○				
			No	-	-				○
		Line 2	Excluded	C02		○			
			No	-	-				○
		Line 3	Excluded	C03			○		
			No	-	-			-	○
		Line 4	Excluded	INT				○	
			No	-	-			-	○
		0030	Line 5 Excluded	C01	○				
			No	-	-				○
		Line 6	Excluded	C02		○			
			No	-	-				○
		Line 7	Excluded	C03			○		
			No	-	-			-	○
Line 8	Excluded	INT				○			
	No	-	-			-	○		
0031	Line 9 Excluded	C01	○						
	No	-	-				○		
Line 10	Excluded	C02		○					
	No	-	-				○		

TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
25	Tenant Group Belongs by Station	3YY0	No assign	00	-	-	-	-	⊕
			Group 1	01	⊕	-	-	-	
			Group 2	02	-	⊕	-	-	
			Group 3	03	⊕	⊕	-	-	
			Group 4	04	-	-	⊕	-	
			Group 5	05	⊕	-	⊕	-	
			Group 6	06	-	⊕	⊕	-	
			Group 7	07	⊕	⊕	⊕	-	
			Group 8	08	-	-	-	⊕	
			Group 9	09	⊕	-	-	⊕	
			Group 10	10	-	⊕	-	⊕	
			Group 11	11	⊕	⊕	-	⊕	
			Group 12	*12	-	-	⊕	⊕	
26	Zone Page Group Belongs by Station	3YY1	No assign	00	-	-	-	-	⊕
			Group 1	01	⊕	-	-	-	
			Group 2	02	-	⊕	-	-	
			Group 3	03	⊕	⊕	-	-	
			Group 4	04	-	-	⊕	-	
			Group 5	05	⊕	-	⊕	-	
			Group 6	06	-	⊕	⊕	-	
			Group 7	07	⊕	⊕	⊕	-	
			Group 8	**08	-	-	-	⊕	

\* Do not use the ACCESS DIAL over 12.

\*\* Does this mean not to ACCESS DIAL over 08.

TABLE G FEATURE PROGRAMMING

If one or more stations were programmed to Class B of Toll Restriction, the following feature No.27, 28, and 29 should be programmed.

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	7 LIGHTED LEDs				SET AT FACTORY
					CO1	CO2	CO3	INT	
27	Restricted Digit number of Toll Restriction Class B	0051	Non	00	-	-	-	-	
			1 digit	01	○	-	-	-	
			2 digits	02	-	○	-	-	
			3 digits	03	○	○	-	-	
			4 digits	04	-	-	○	-	
			5 digits	05	○	-	○	-	
			6 digits	06	-	○	○	-	
			7 digits	07	○	○	○	-	
			8 digits	08	-	-	-	○	○
			9 digits	09	○	-	-	○	
			10 digits	10	-	○	-	○	
			11 digits	11	○	○	-	○	
			12 digits	12	-	-	○	○	
			13 digits	13	○	-	○	○	
			14 digits	14	-	○	○	○	
15 digits	15	○	○	○	○				

No.	FEATURE	ACCESS CODE	3-digit Number to Restrict	Number Z	LIGHTED LEDs			
					CO1	CO2	CO3	INT
28	Restricted Special Ten 3-digit Numbers of Toll Restriction at Class B	7000	Z Z Z	1	○	-	-	-
		7100		2	-	○	-	-
		7200		3	○	○	-	-
		7300		4	-	-	○	-
		7400		5	○	-	○	-
		7500		6	-	○	○	-
		7600		7	○	○	○	-
		7700		8	-	-	-	○
		7800		9	○	-	-	○
		7900		0	-	○	-	○
				non	-	-	-	-
		*	○	○	-	○		
		#				○		

No.	FEATURE	ACCESS CODE	OPTION	ACCESS KEY	7 LIGHTED LEDs				SET AT FACTORY
					CO1	CO2	CO3	INT	
29	Removal of Initial Digit Restriction from Class B	0001	None	-	-	-	-	-	○
			0	CO1	○	-	-	-	
			1	CO2	-	○	-	-	
			0 and 1	CO1,2	○	○	-	-	

Note : To program 3-digit number for restriction key in 4 digit access code.  
Then enter 3-digit number from dial pad.

Note : Program item No.28, indicator LED's are not lit but can be confirmed  
by taking following STEPS as listed right of No.28.

STEP 1 Press ACCESS CODE. First digit will be displayed.

STEP 2 Press FEAT key. Second digit will be displayed.

STEP 3 Press FEAT key again. Third digit will be displayed.

Note : To cancel 3-digit number for restriction press INT key, then each digit.

TABLE G FEATURE PROGRAMMING

If tenant feature was programmed, the following feature No.30 and 31 should be programmed.

No.	FEATURE	ACCESS CODE	OPTION		ACCESS KEY	*LIGHTED LEDs				SET AT FACTORY	
						CO1	CO2	CO3	INT		
30	Tenant Group Restriction	6XX0	Group 1	Restricted	-	-					
				Non	CO1	○				○	
			Group 2	Restricted	-		-				
				Non	CO2		○			○	
			Group 3	Restricted	-			-			
				Non	CO3			○		○	
			Group 4	Restricted	-				-		
				Non	INT				○	○	
			6XX1	Group 5	Restricted	-	-				
					Non	CO1	○				○
				Group 6	Restricted	-		-			
					Non	CO2		○			○
		Group 7		Restricted	-			-			
				Non	CO3			○		○	
		Group 8		Restricted	-				-		
				Non	INT				○	○	
		6XX2		Group 9	Restricted	-	-				
					Non	CO1	○				○
				Group10	Restricted	-		-			
					Non	CO2		○			○
			Group11	Restricted	-			-			
				Non	CO3			○		○	
			Group12	Restricted	-				-		
				Non	INT				○	○	

TABLE G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS KEY	*LIGHTED LEDs				SET AT FACTORY
					C01	C02	C03	INT	
31	Tenant Type	0011	Can Not access	-			-	-	○
			Can access Halted Line	C03			○	-	
			Restrict Outside Calls	INT			-	○	
			No Restriction	C03,INT			○	○	

\* : Unable to do outgoing call in all cases.

Table H

CLASS	CONTENTS	
	C.O.LINE	Behind PBX
Class A	No restriction	No restriction
Class B	<ol style="list-style-type: none"> <li>1. Dialing 0 or 1 will automatically restrict a call. (This restriction can be removed.)</li> <li>2. Dialing more than programmed digits will automatically restrict a call.</li> <li>3. Dialing programmed 3-digits number will automatically restrict a call.</li> </ol>	<ol style="list-style-type: none"> <li>1. Dialing PBX access code plus 0 or 1 will automatically restrict a call. (This restriction can be removed.)</li> <li>2. Dialing PBX access code plus more than programmed digits will automatically restrict a call.</li> <li>3. Dialing PBX access code plus programmed 3-digits will automatically restrict a call.</li> </ol>
Class C	Dialing outside line code will automatically restrict a call.	Dialing outside line code following with PBX access code will automatically restrict a call.
Class D	Dialing outside line code will automatically restrict a call except a common speed dialing.	Dialing outside line code following with PBX access code will automatically restrict a call except a common speed dialing.

Note: Of Class B, private speed dialing is toll-restricted.

Common speed dialing is not toll-restricted.

Table G FEATURE PROGRAMMING

No.	FEATURE	ACCESS CODE	OPTION	ACCESS DIAL	7 LIGHTED LED <sub>s</sub>				SET AT FACTORY
					C01	C02	C03	INT	
32	Prepause time for Automatic CO Access	0071	(1 sec.)	00	-	-	-	-	⊗
			1 sec.	01	⊗	-	-	-	
			2 sec.	02	-	⊗	-	-	
			3 sec.	03	⊗	⊗	-	-	
			4 sec.	04	-	-	⊗	-	
			5 sec.	05	⊗	-	⊗	-	
			6 sec.	06	-	⊗	⊗	-	
			7 sec.	07	⊗	⊗	⊗	-	
			8 sec.	08	-	-	-	⊗	
			9 sec.	09	⊗	-	-	⊗	
			10 sec.	10	-	⊗	-	⊗	
			11 sec.	11	⊗	⊗	-	⊗	
			12 sec.	12	-	-	⊗	⊗	
			13 sec.	13	⊗	-	⊗	⊗	
			14 sec.	14	-	⊗	⊗	⊗	
15 sec.	15	⊗	⊗	⊗	⊗				

## 3. FCC COMPLIANCE

## RADIO FREQUENCY INTERFERENCE

3.01 The ECMV card generate and use radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. Both have been type tested and found to comply with the limits for a Class A device in accordance with the specifications in Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by unplugging and plugging in the key service unit, the user is encouraged to try to correct the interference by one or more of the following measures:

- (a) Reorient the radio or TV receiving antenna.
- (b) Relocate the key service unit with respect to the radio or TV receiver.
- (c) Plug the key service unit into a different outlet so that it and the radio or TV receiver are on different branch circuits.

3.02 If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

## HEARING AID COMPATIBILITY

3.03 FCC rules prohibit the use of non-hearing-aid compatible telephones in the following locations:

1. Any public or semipublic location where coin-operated or credit card telephones may be found.
2. Elevators, highways and tunnels (automobile, subway, railroad or pedestrian) where a person with impaired hearing might be isolated in an emergency.
3. Places where telephones are specifically installed to alert emergency authorities such as fire, police or medical assistance personnel.
4. Hospital rooms, residential health care facilities, convalescent homes, and prisons, specifically where telephones are used for signaling life-threatening or emergency situations if alternative signaling methods are not available.
5. Workstations for hearing impaired personnel.
6. Hotel, motel, apartment lobbies; in stores where telephones are used by patrons to order merchandise; in public transportation terminals where telephones are used to call taxis, or to reserve lodging or rental automobiles.
7. Hotel and motel rooms. (At least ten percent of the room must contain hearing-aid compatible telephones; or contain jacks for plug-in hearing-aid compatible telephones which will be provided to hearing impaired customers upon request.)