

**MU-100 VERSION**  
**INSTALLATION HAND BOOK**

# **INSTITUTIONAL COMMUNICATION SYSTEM**

## **IC-100**

## FCC REQUIREMENTS

- (1) This equipment complies with Part 68 of the FCC rules. On the front panel of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested this information must be provided to the telephone company.
- (2)

USOC Jack	RJ11C or RJ11W
Service Order Code	9.0F
Facility Interface Code	02LS2
- (3) The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's contact the telephone company to determine the maximum REN for the calling area.
- (4) If the terminal equipment IC-100 causes harm to the telephone network, the telephone company will notify you in advance. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
- (5) The telephone company may make changes in it's facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.
- (6) If trouble is experienced with this equipment IC-100, please contact Toa Electronics Inc., 601 Gateway Boulevard South Sanfrancisco, CA 94080 ☎ No. 415 - 588 - 2538 for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.
- (7) This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.
- (8) This equipment is hearing aid compatible.

## DOC NOTICE 1.

**"NOTICE:** The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications networks protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



**Caution** : Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate."

## DOC NOTICE 2.

"The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100."

## DOC AVIS 1.

**"AVIS** : –L'étiquette du ministère des Communications du Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêchent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

**Avertissement.** –L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas."

## DOC AVIS 2.

"L'indice de charge (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100."



**WARNING : (For U.S.A. only)**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subject J of Part 15 of FCC Rules, which are designed to provide reasonable protection such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

## CONTENTS

### PART. I. GENERAL DESCRIPTION

1. Outline and Features .....	3
2. System Configuration and Module Functions	
2.1 System Configuration .....	4
2.2 Module Functions .....	5-6

### PART. II. INSTALLATION

1. Installation and Adjustment Procedure .....	7
2. Equipment Installation	
2.1 Installation Precautions .....	7
2.2 CK-100 Card Case .....	8-9
2.3 Power Supply .....	10-11
2.4 Sub-station	
(1) RS-100 Switch Panel .....	12
(2) RS-110 Sub-station Handset .....	12
2.5 AS-100 Control Station .....	13-15
3. Line Installation .....	16
4. Interconnection	
4.1 Card Installation and Connection .....	16-17
4.2 MU-100 Main Control Card Connection .....	18-19
4.3 LU-100 and AS-100/RS-100/RS-110 Interconnection .....	20-23
4.4 CT-100 C/O & Tie-line Card Connection .....	24-26
4.5 PS-100 Power Supply Card Connection .....	27
5. System Programming	
5.1 Programable Functions .....	28-32
5.2 Programming Operation .....	33
(1) Programming Mode Entry .....	33
(2) Function Reset .....	33
(3) Function Registration .....	34-36
5.3 Time Schedule Programming .....	37-38
5.4 Programming Examples .....	39-41
5.5 Operating Precautions .....	41
6. Operation Check	
6.1 Voice and Function tests .....	42
6.2 Troubleshooting .....	43



# PART I. GENERAL DESCRIPTION

## 1. Outline and Features

### Outline

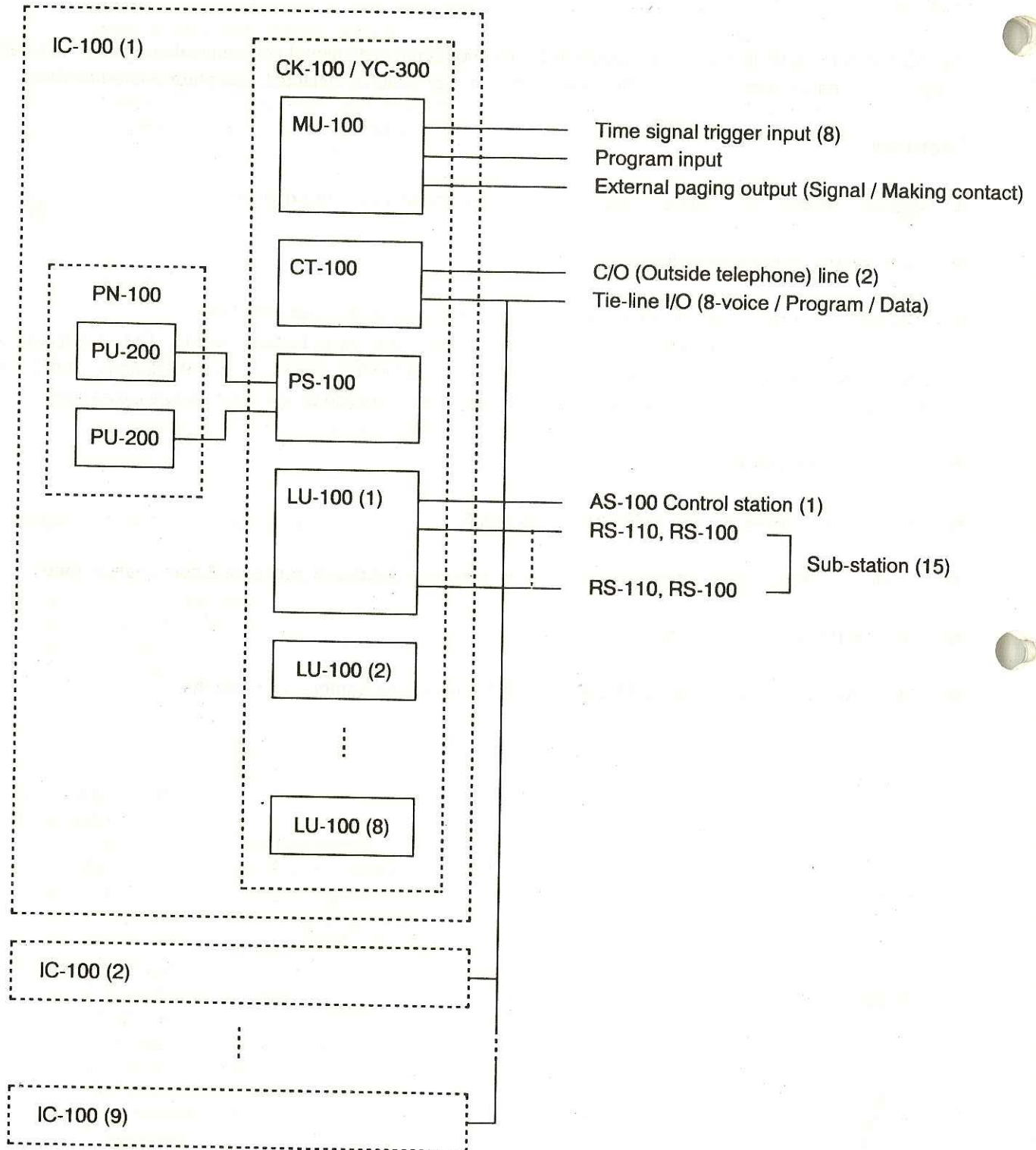
The "IC-100 SYSTEM" is a computer-controlled, fully electronic institutional communication system specially designed to enhance administrative efficiency in schools, Correctional institutes, and other related facilities.

### Features

- Modular construction facilitates installation, maintenance and system expansion.
- Rack- or wall-mountable exchange.
- Flexible configuration meets requirements of both small and large-scale installations.  
The smallest group configuration features 1 control station and up to 15 sub-stations. The system can be expanded in groups of the same size to include up to 8 control stations, 120 sub-stations, and 2 C/O (outside telephone) lines per exchange, with tie-line interconnection possible for up to 9 exchanges.
- 8 speech links available.
- Built-in programable clock (2 schedules x 256 steps).
- Random broadcast programing capability for up to 10 sub-stations, 9 zones, or 9 combination zones.
- External PA paging capability.
- Call Forwarding, Speed Dialing, Redialing, Call Transfer, and Conference functions.

## 2. System Configuration and Module Functions

### 2.1 System Configuration





## 2.2 Module Functions

- **MU-100 Main Control Card**

Utilizing a Z80 CPU, the Main Control Card automatically controls speech path switching functions upon reception of either a dial signal from the control station or a "call" or "privacy" signal from any of the connected sub-stations. The card also generates time-programable signal tones, and provides computer communication capability through its RS-232C port.

- **CT-100 C/O & Tie-line Card**

The C/O & Tie-line Card functions as both an outside telephone (C/O) line interface and a local tie-line interface. Its C/O line interface is compatible with both loop and ground start systems, and utilizes DTMF dialing signals for its 2 outside lines, which are in full compliance with FCC Part 68 regulations. The tie-line interface permits interconnection of up to 9 exchanges, with 8 sets of voice input/output, 1 set of program input/output, and 1 set of control input/output.

- **LU-100 Line Card**

The LU-100 incorporates interface circuitry for control station connection, relay, talk-back, and hybrid circuitry for sub-station connection, and a speech path switch.

The control station interface outputs a dial signal to the Main Control Card upon control station dial signal reception. Other functions include FM signal demodulation, sound amplification, and power supply for control station and sub-station speaker output. One control station and up to 15 sub-stations can be connected per Line Card.

The sub-station interface features an AGC-equipped 15W power amplifier for sub-station speaker talk-back capability, relayed switching of up to 15 sub-stations, photocoupled reception of "call" and "privacy" signals, and hybrid circuitry for sub-station handset operation.

- **PS-100 Power Supply Card**

Receiving AC power from the PU-200 Power Transformer Unit, the PS-100 provides 5V, 15V, and 24V DC power output to all other cards in the exchange via its rectification and stabilizer circuitry. DC input is also provided for a standby battery to ensure full operating capability in case of power failure.

- **CK-100 Card Case / YC-300 Wall Mounting Frame**

The CK-100 houses all system boards. It can either be installed in an EIA standard 19" rack or independently wall-mounted in conjunction with the YC-300 Wall Mounting Frame.

- **PU-200 Power Transformer Unit**

The wall-mountable PU-200 provides two 20V/2.5A AC outputs to the PS-100 Power Supply Unit to drive up to four LU-100 Line Cards. A maximum of two PU-200's can be connected to the PS-100.

- **PN-100 Rack Mount Panel**

The PN-100 provides side-by-side rack mounting capability for up to two PU-200 Power Transformer Units.

- **AS-100 Control Station**

The AS-100 Control Station provides full duplex communication with other control stations and handset sub-stations via its handset receiver. Also featured are "handsfree" communication capability, and 12-digit LCD display of connected sub-station No., dialed numbers, sub-station priority status, and a digital clock. It utilizes a 4-wire system.

- **RS-100 Switch Panel**

The RS-100 Switch Panel mounts two button switches, a red **CALL** button and a white **PRIVACY** button, and controls the connected RS-110 Handset and/or a remote speaker. The flush-mount panel can be installed in a standard 1-gang electrical box and connected via a single-pair shielded cable.

- **RS-110 Sub-station Handset (Room Station Handset)**

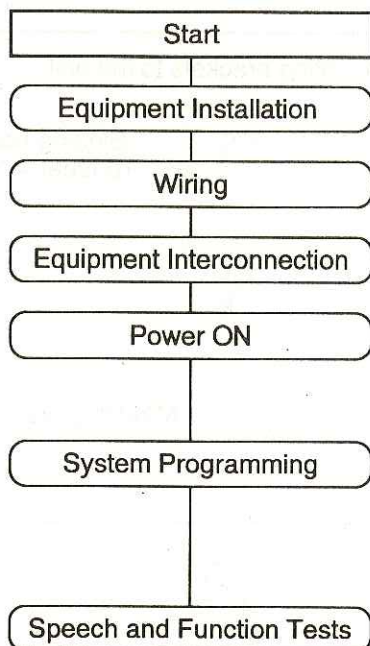
The RS-110 Sub-station Handset provides full duplex communication with the AS-100 Control Station. The wall-mount cradle can be installed in a standard 2-gang electrical box and connected via a single-pair shielded cable.



## PART II. INSTALLATION

### 1. Installation and Adjustment Procedure

Follow the below procedures when installing and adjusting the system.



CK-100's LED goes out, remains lit, or flashes.

LED flashes after "Time setting" completion.  
(Refer to "Function Code 83" in "Section 5.2(3) Function Registration".)

### 2. Equipment Installation

#### 2.1 Installation Precautions

Observe the following precautions when installing the exchange.

- When mounting on the wall, confirm that the wall surface is strong enough to support the weight of the exchange. TOA cannot accept responsibility for accidents resulting from poor mounting conditions.
- Install in a location that affords easy maintenance and inspection.
- Avoid the following locations when installing equipment:
  - (1) Locations where equipment can be exposed to fire, excessive heat or sunlight.
  - (2) Locations where metal particles or dust accumulate.
  - (3) Locations in close proximity to chemicals or oil.
  - (4) Locations of high humidity or near windows where the equipment may be exposed to rain.
  - (5) Locations in close proximity to high-voltage equipment or strong electric fields.

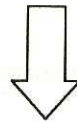
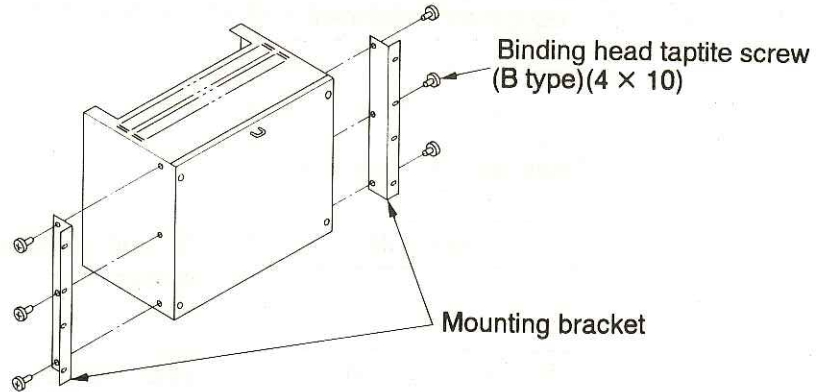
## 2.2 CK-100 Card Case

Follow the procedures below when installing the CK-100.

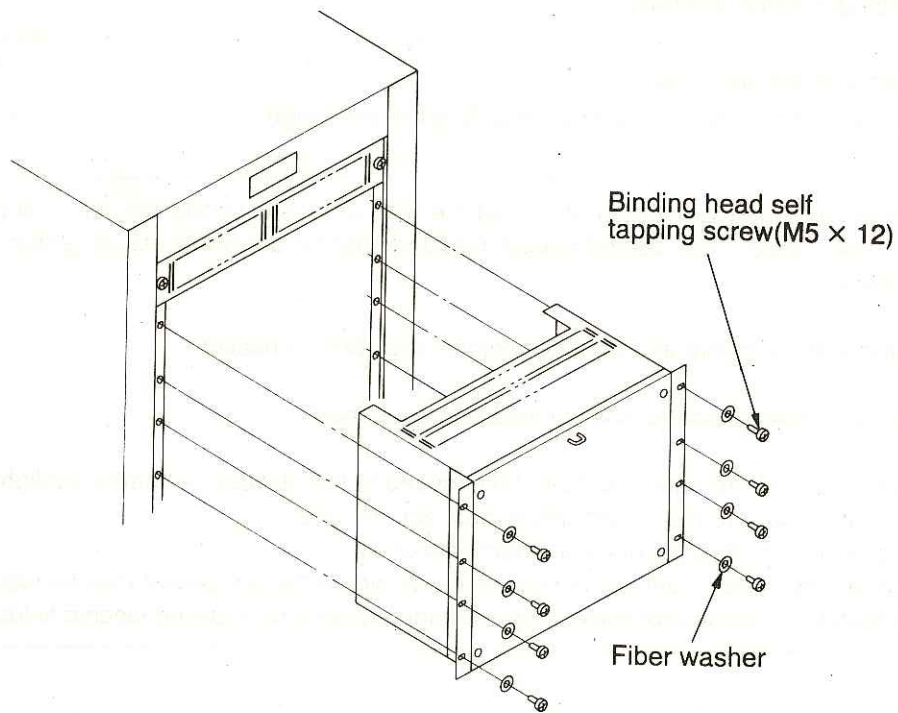
[Note] : The CK-100 must be connected to either the PU-100's case or ground.

### (1) Rack Mounting

- ① Attach the supplied rack mounting brackets to the unit.



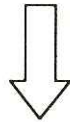
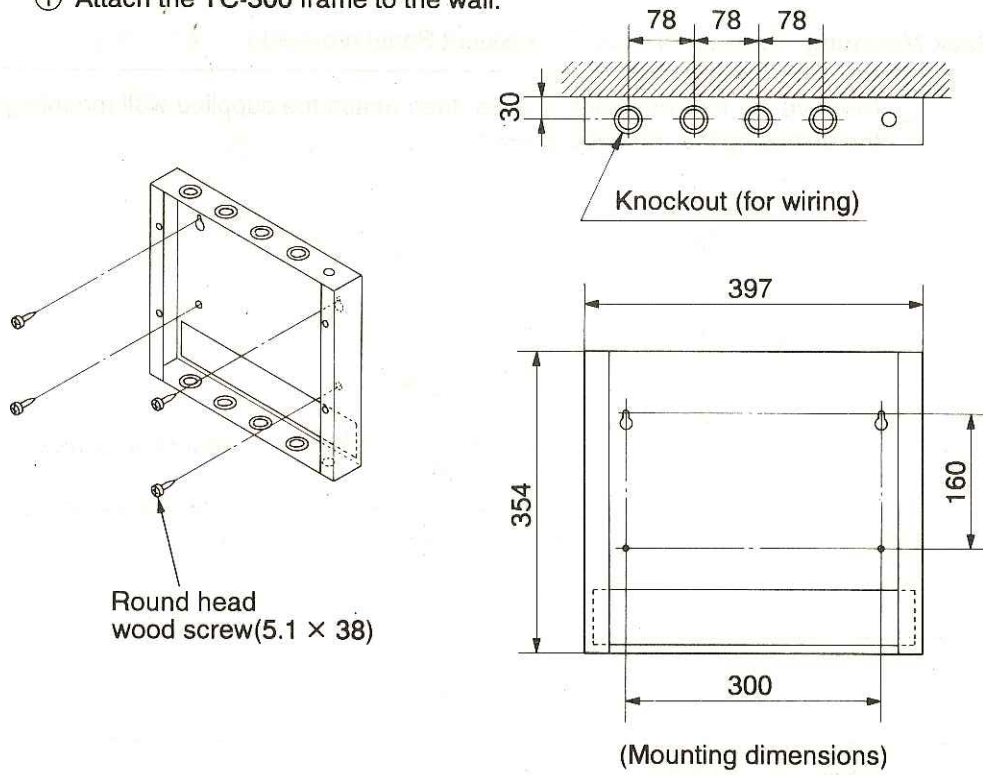
- ② Mount the unit in a standard equipment rack.



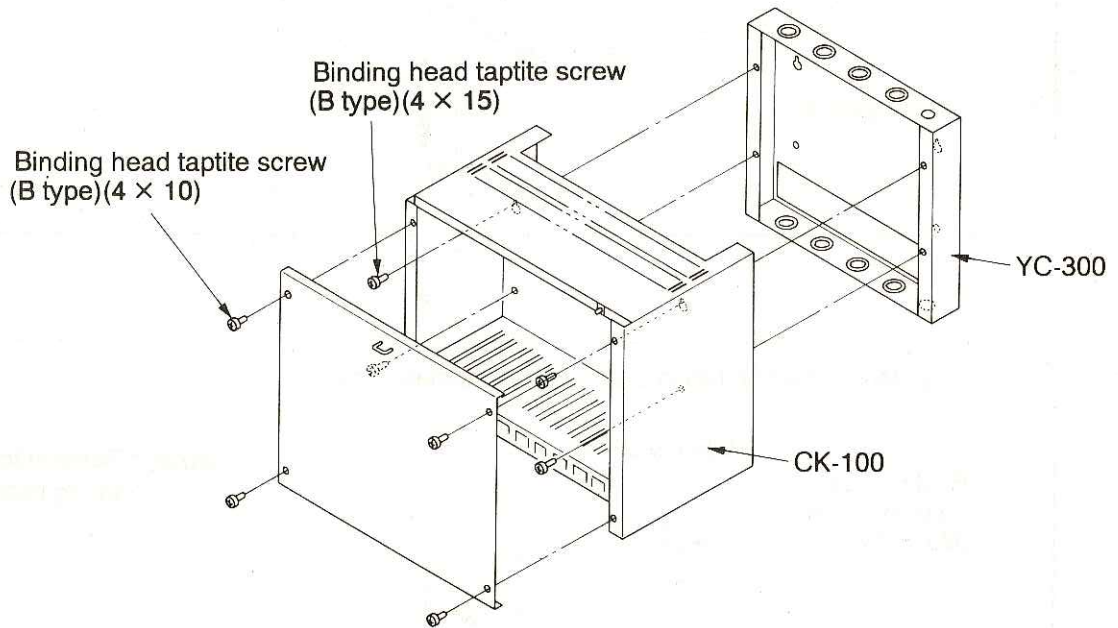


**(2) Wall Mounting** (Optional YC-300 Wall Mounting Frame required.)

① Attach the YC-300 frame to the wall.



② After removing the CK-100's front panel, mount the unit on the Wall Mounting Frame.

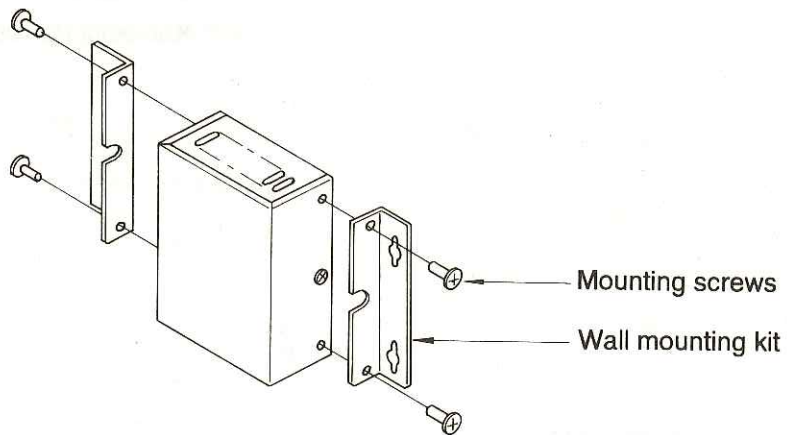


## 2.3 Power Supply

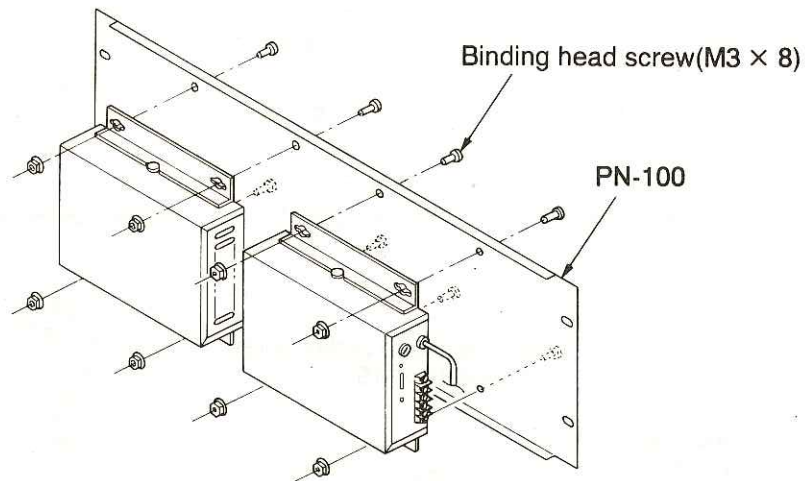
Follow the procedures below when installing the PU-200 Power Transformer Unit.

### (1) Rack Mounting (Optional PN-100 Rack Mount Panel required.)

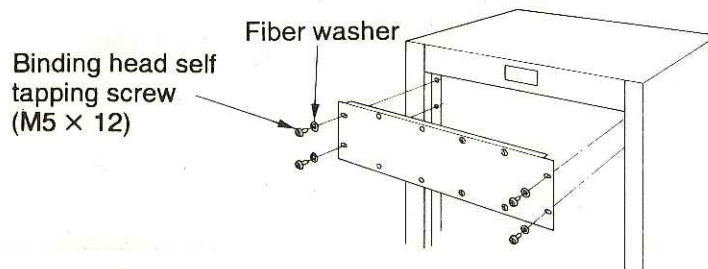
- ① Remove the four mounting screws, then attach the supplied wall mounting kit to the unit using the removed screws.



- ② Attach the PU-200 to the PN-100 panel.



- ③ Mount the PN-100 in a standard equipment rack.

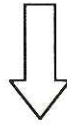
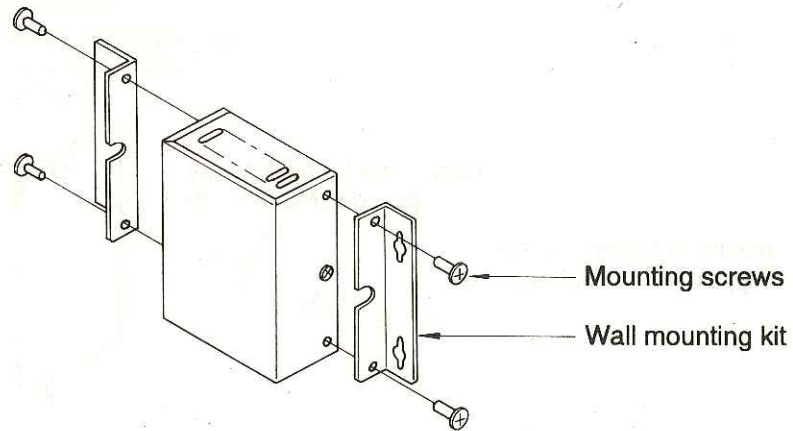


**[Note] :** Perform terminal wiring before mounting.



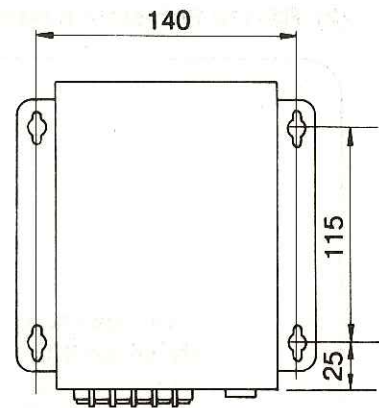
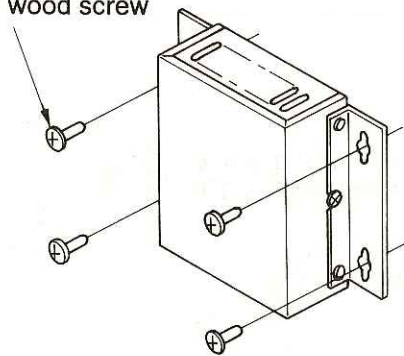
## (2) Wall Mounting

- ① Remove the four mounting screws, and attach the supplied wall mounting kit to the PU-200 using the removed screws.



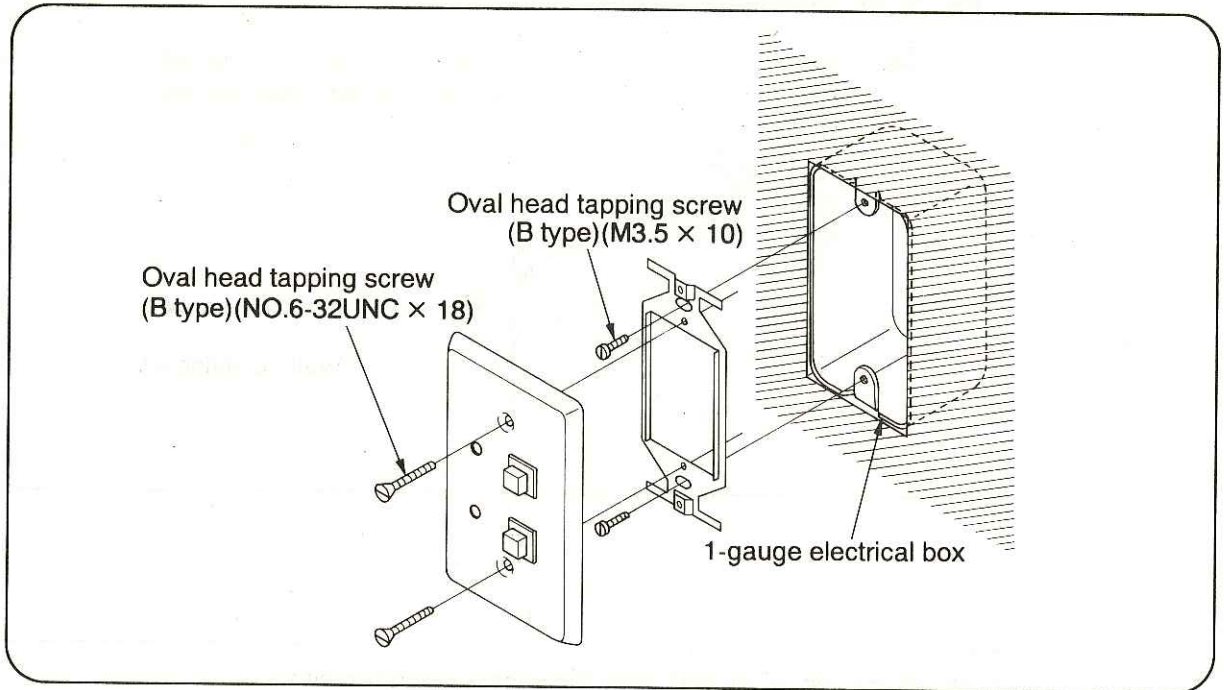
- ② Mount the unit on the wall using the supplied wood screws.

Round head wood screw  
(5.1 × 38)

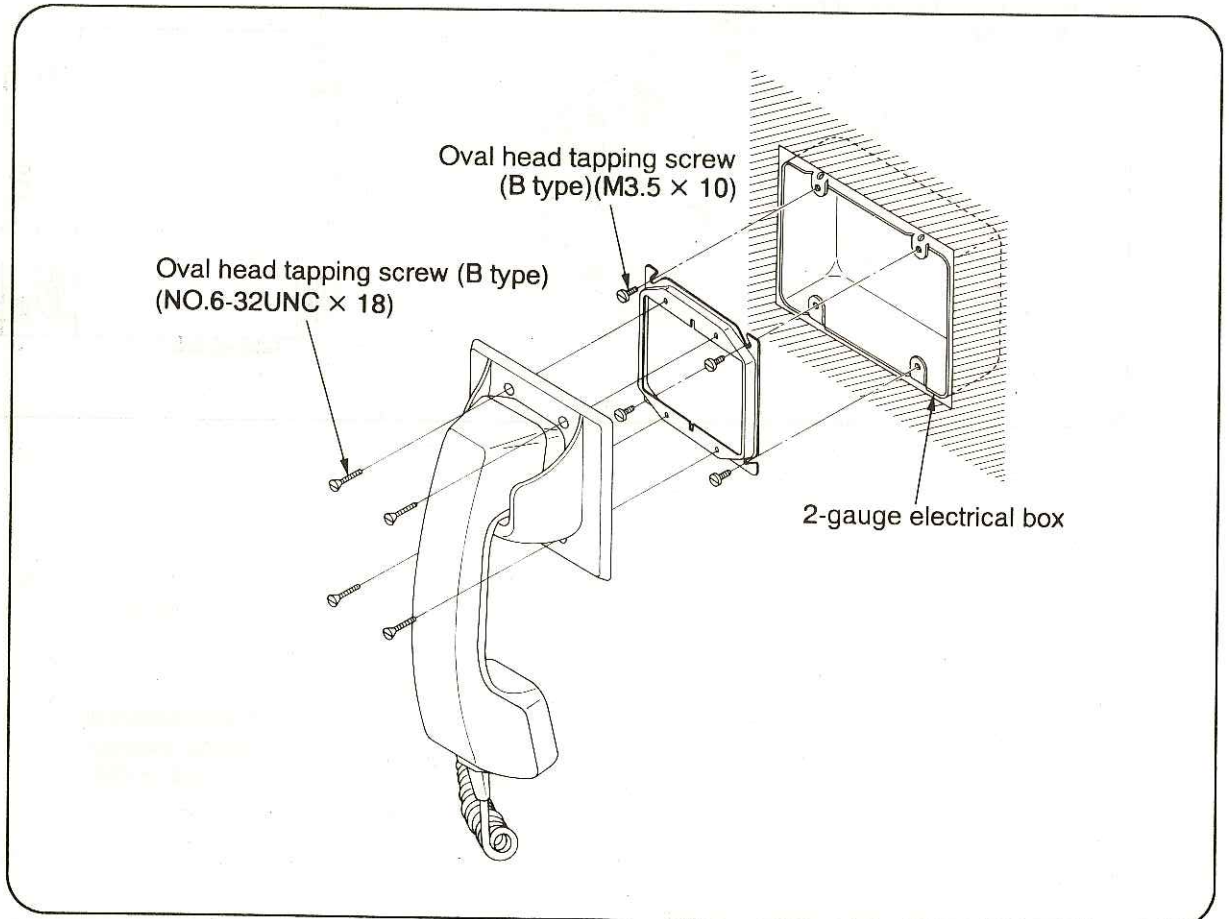


## 2.4 Sub-station

### (1) RS-100 Switch Panel



### (2) RS-110 Sub-station Handset

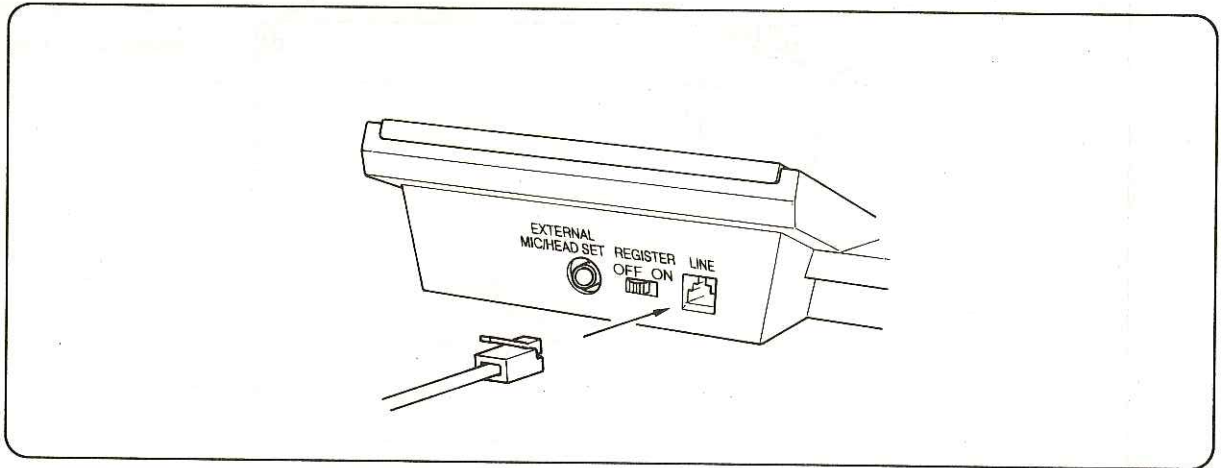




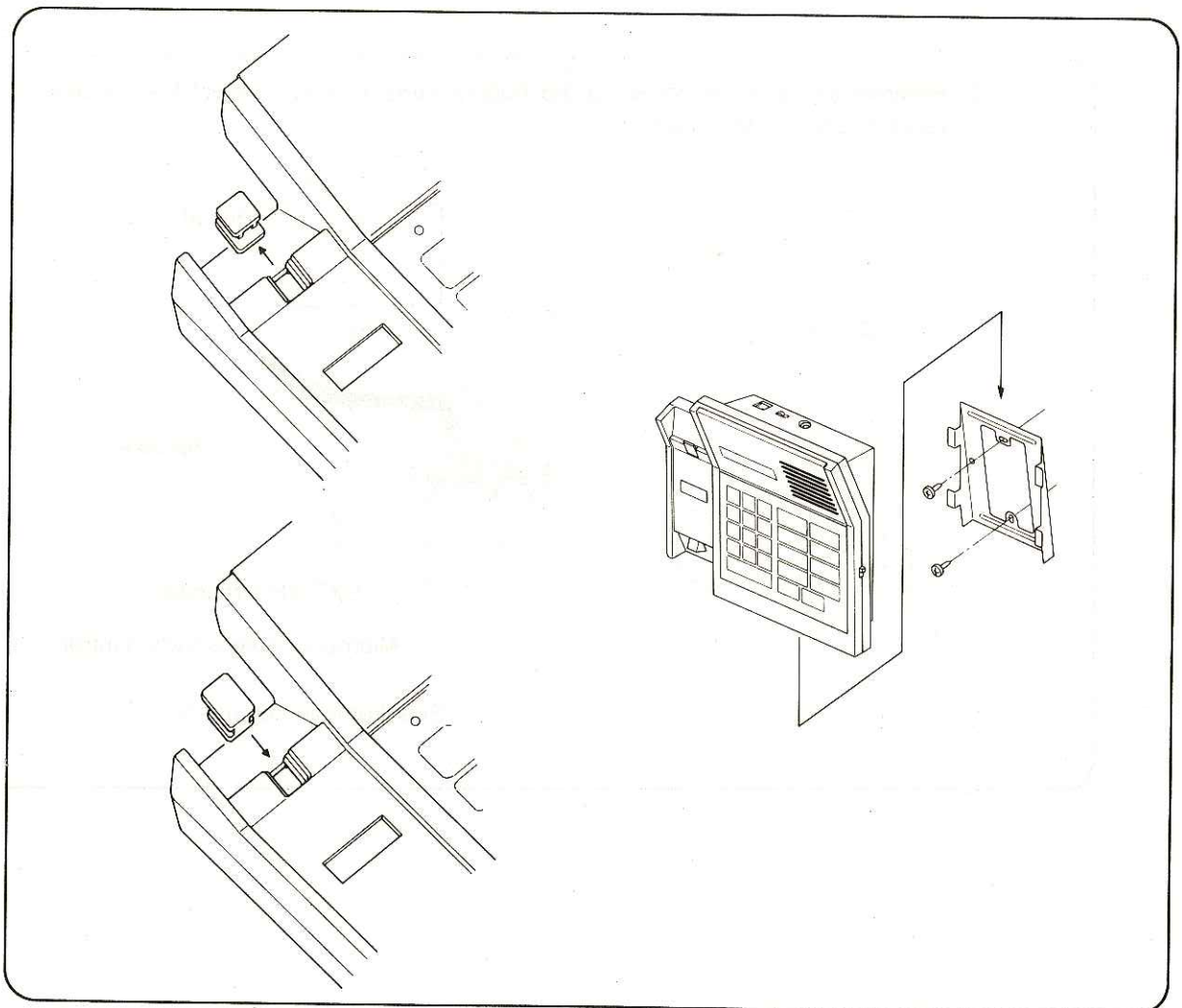
## 2.5 AS-100 Control Station

### (1) Installation

- Desk-top Applications  
Connect the supplied modular cord.



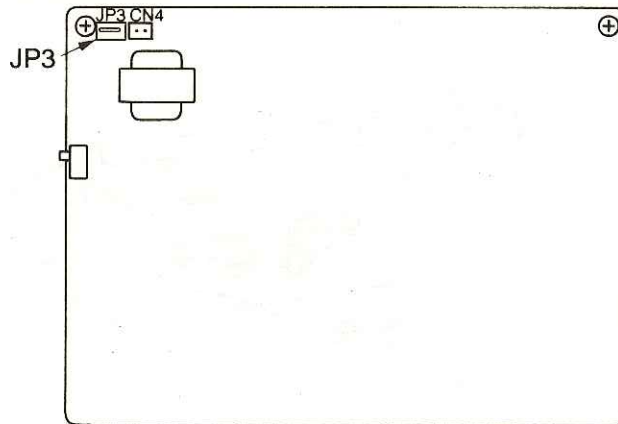
- Wall Mounted Applications  
Pull out, rotate, and reset the cradle hook.



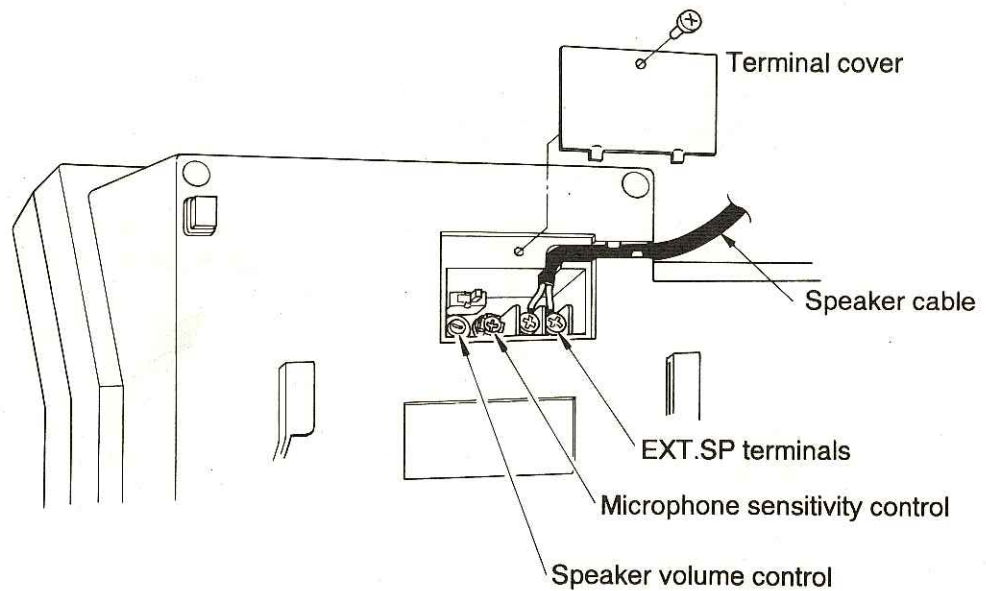
## (2) External Speaker Connection

Follow the procedures below to connect an external speaker (4~8 ohms) to the AS-100, when the volume level of the internal speaker is not enough.

- ① Open the case, and cut JP3, located at the upper left hand corner of the p.c. card.



- ② Remove the terminal cover on the bottom surface, and connect the speaker cable to EXT.SP terminals.



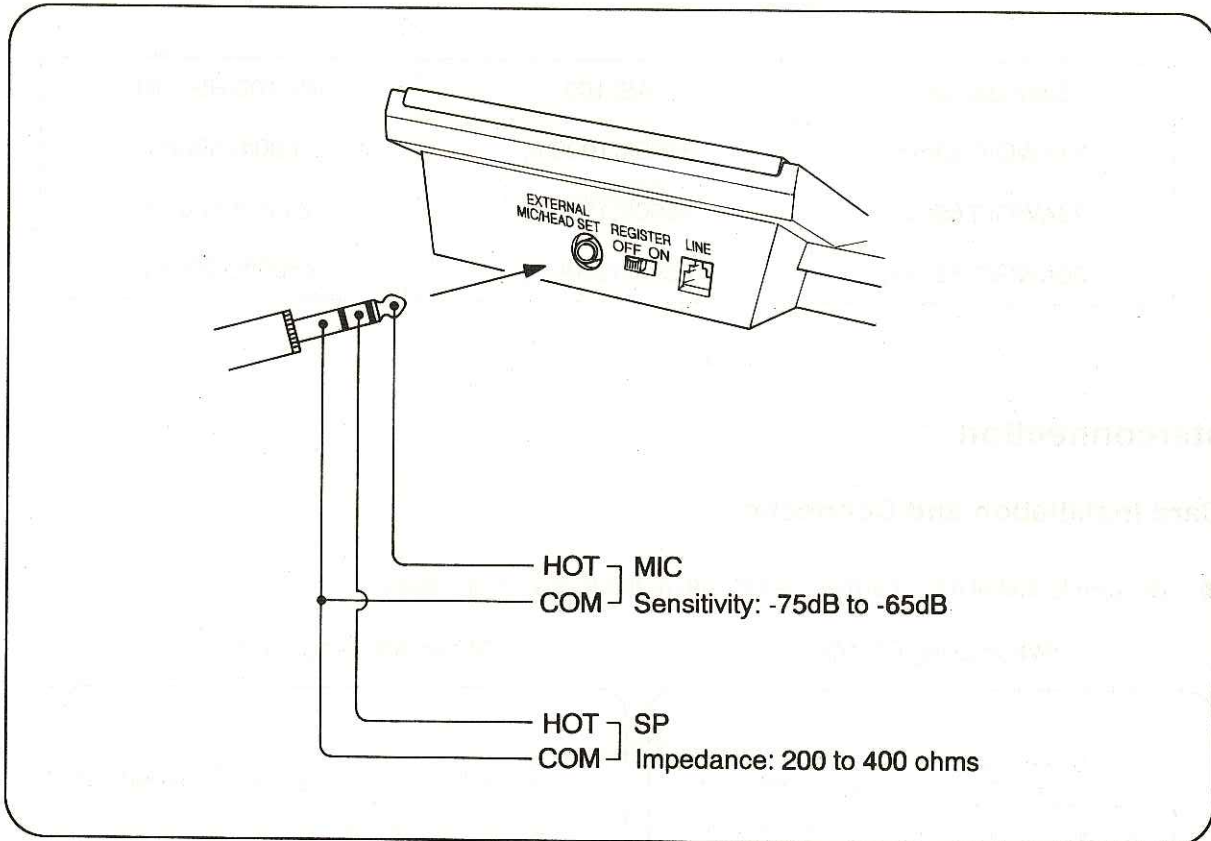


**(3) Speaker Volume and Microphone Sensitivity Adjustment**

The AS-100's speaker volume and microphone sensitivity can be adjusted at their respective controls, located under the terminal cover. Both controls are factory-preset to their maximum positions.

**(4) External Microphone or Headset Connection**

A microphone or headset can be connected for use instead of the handset. Refer to the illustration below for connection.



### 3. Line Installation

- Be sure to use 2-pair twisted cable to wire the AS-100, and single pair twisted cable with shield for the RS-100 and RS-110.
- Ensure the AS-100 and sub-station cables are isolated from power or data transmission lines.
- Refer to the following table for the maximum recommended length for each cable type.

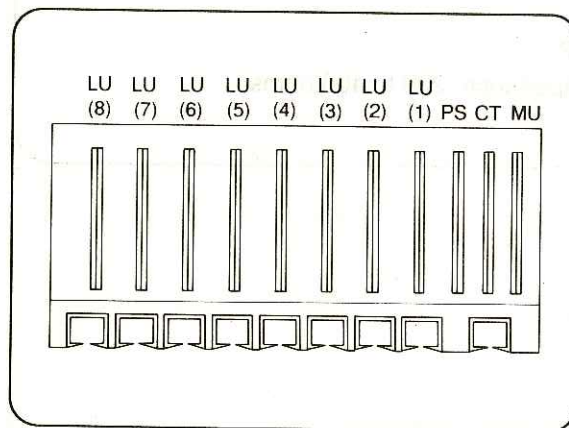
Core diameter	AS-100	RS-100/RS-110
24AWG(0.52mm)	3000ft(1000m)	1800ft( 500m)
22AWG(0.65mm)	4800ft(1500m)	2800ft( 800m)
20AWG(0.82mm)	6500ft(2000m)	4500ft(1300m)

### 4. Interconnection

#### 4.1 Card Installation and Connection

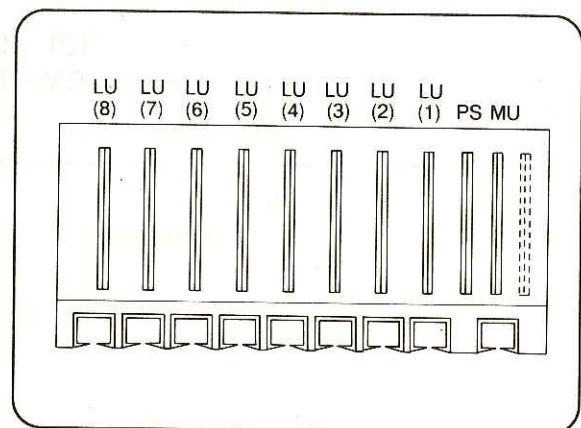
- Be sure to install each card in the CK-100 in the following positions.

(When using CT-100)



(Front view)

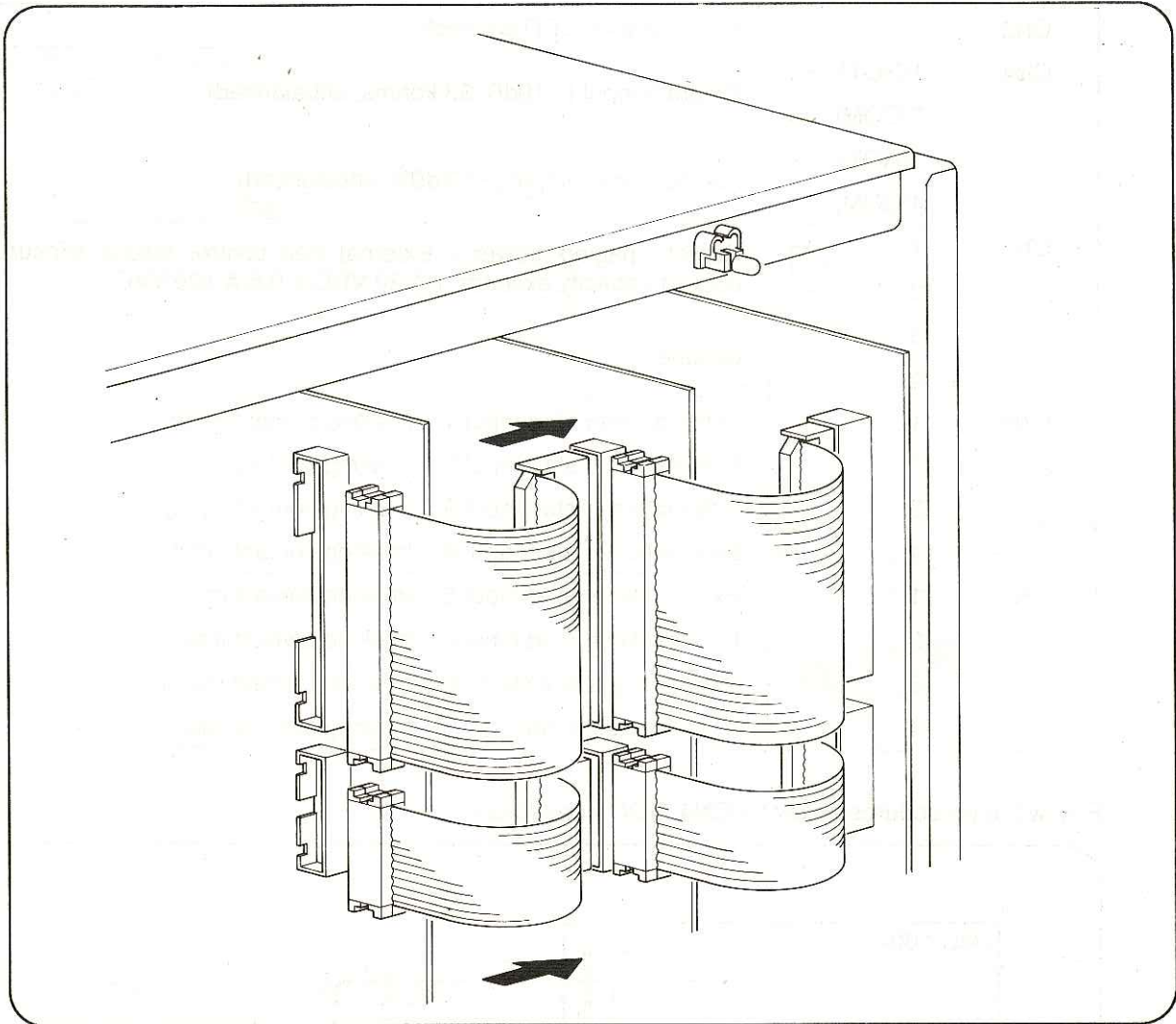
(When not using CT-100)



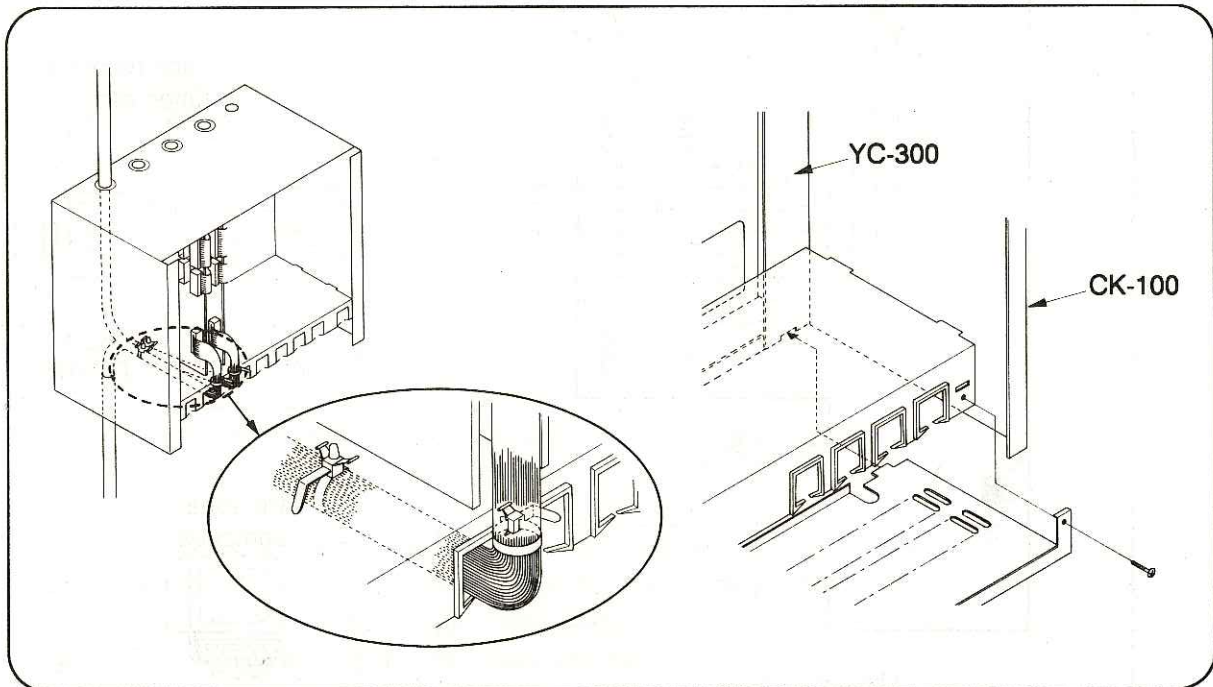
(Front view)



- Interconnect such units as the MU-100 and LU-100 as shown below.



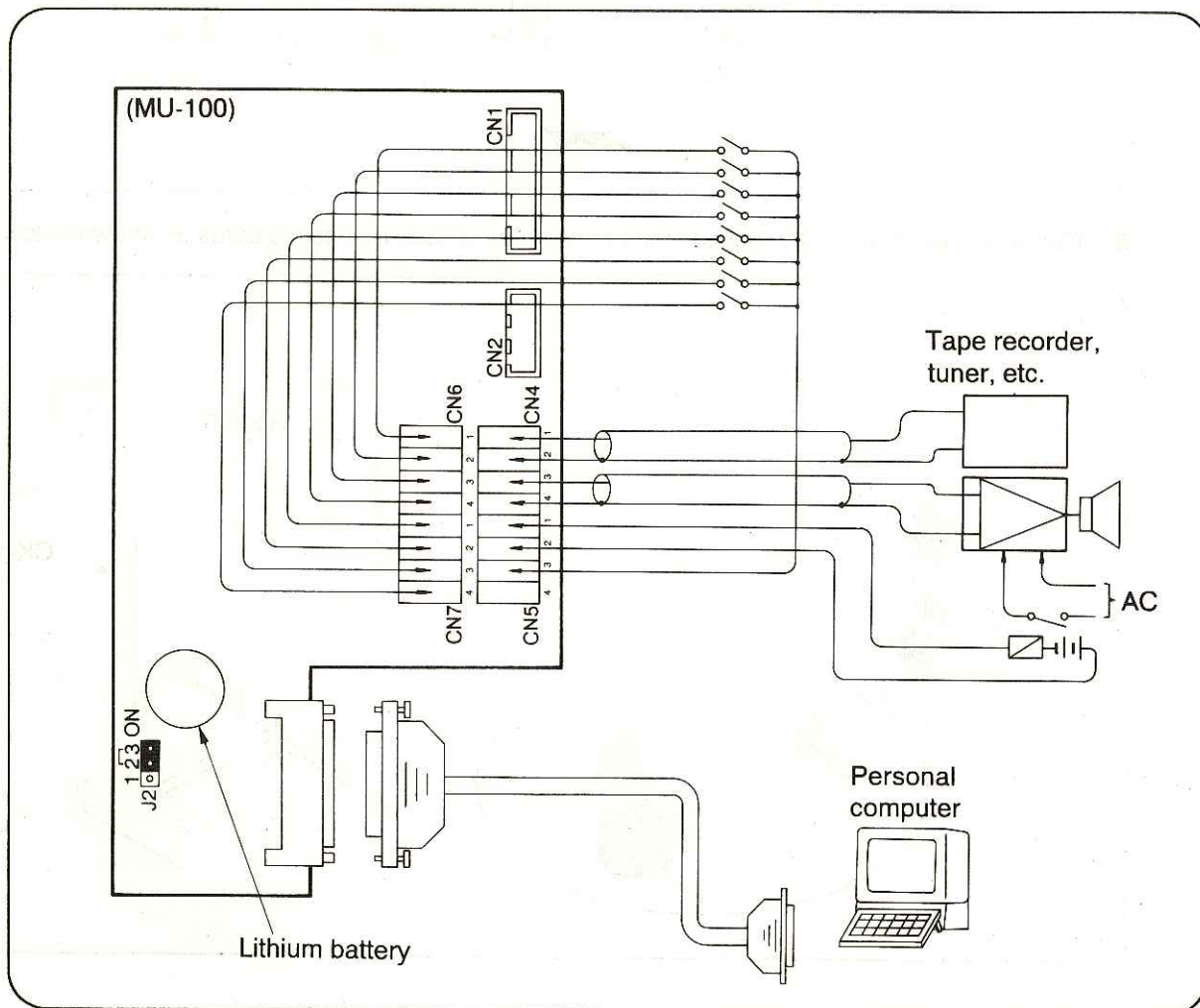
- Connect stations and C/O (outside telephone) lines to their respective cards as shown below.



## 4.2 MU-100 Main Control Card Connection

CN3		Run indication LED connector
CN4	1(HOT) ]	Program input (- 10dB, 33 kohms, unbalanced)
	2(COM) ]	
	3(HOT) ]	Paging signal output (- 10 dBV, unbalanced)
	4(COM) ]	
CN5	1 ]	Remote paging power / External bell control output (Ensure contact capacity exceeds 1 A 30 VDC or 0.5 A 125 VAC.)
	2 ]	
	3 ]	Ground
	4 ]	
CN6	1:	External timer start input 1 (making contact input)
	2:	External timer start input 2 (making contact input)
	3:	External timer start input 3 (making contact input)
	4:	External timer start input 4 (making contact input)
CN7	1:	External timer start input 5 (making contact input)
	2:	External timer start input 6 (making contact input)
	3:	Emergency alarm start input (making contact input)
	4:	Fire alarm start input (making contact input)

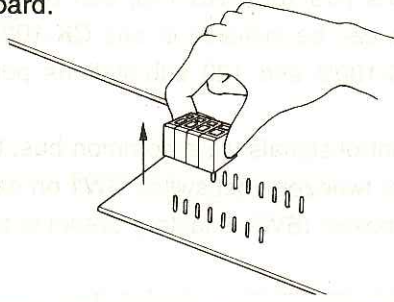
Follow the procedures below for CN4 - CN7 connection.



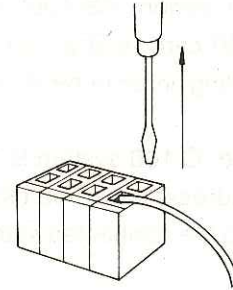


### <Cable Connection>

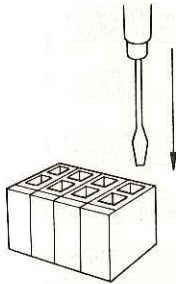
(1) Pull the terminal block off the p.c. board.



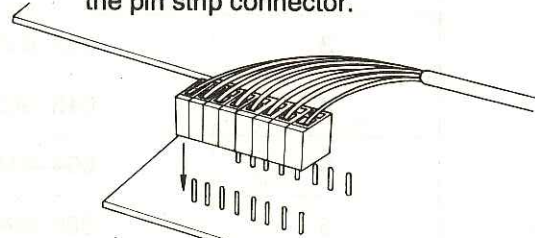
(4) Remove the screwdriver.



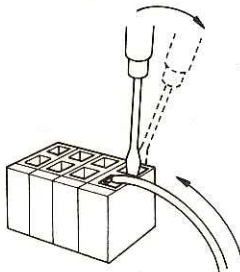
(2) Insert a screwdriver.



(5) After cable connection completion, press the terminal block back onto the pin strip connector.



(3) Strip the cable and insert the lead into the connector.



### <Lithium Battery and Jumper J2>

- Jumper J2 for internal clock backup is factory-preset to OFF. Be sure to set to ON at the time of installation.
- The lithium battery keeps the internal clock in operation when the power of the system is switched off. Its approximate life is two to three years, but this changes depending on its environment and conditions of use. The AS-100 displays inaccurate time as the battery reaches the end of its life. In such a case, replace the detachable battery with the same type of lithium battery.

### 4.3 LU-100 and AS-100/RS-100/RS-110 Interconnection

#### (1) LU Card Number Setting

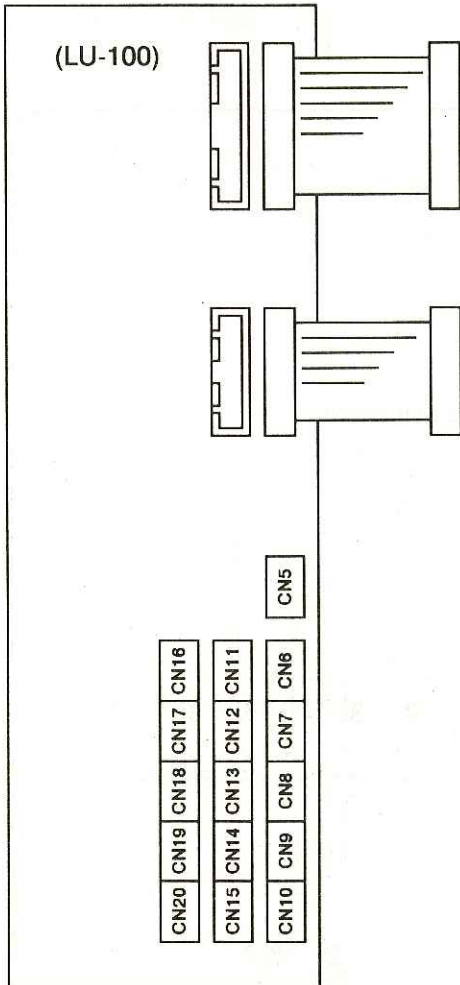
One control station (AS-100) and up to 15 sub-stations (RS-100 / RS-110) can be connected to each LU-100 card, and a maximum of eight LU cards can be installed in one CK-100 card case, thus permitting interconnection of a total of eight AS-100's and 120 sub-stations per exchange system.

Because the IC-100 system is designed to transmit control signals via a common bus, the LU card number (address) has to be established. Using pliers or tweezers, set switch SW1 on each LU card according to the connected station numbers as shown below. (SW1 is factory-preset to position "1".)

LU unit No.	Station Line No.		SW1 position
	Sub-station	Control station	
1	000~014	015	
2	016~030	031	
3	032~046	047	
4	048~062	063	
5	064~078	079	
6	080~094	095	
7	096~110	111	
8	112~126	127	

**(2) LU Card Connection**

Connect the control station line to connector CN5 and the sub-station lines to connectors CN6 through CN20 as shown in the figures below. (Refer to page 20 for cable connection.)

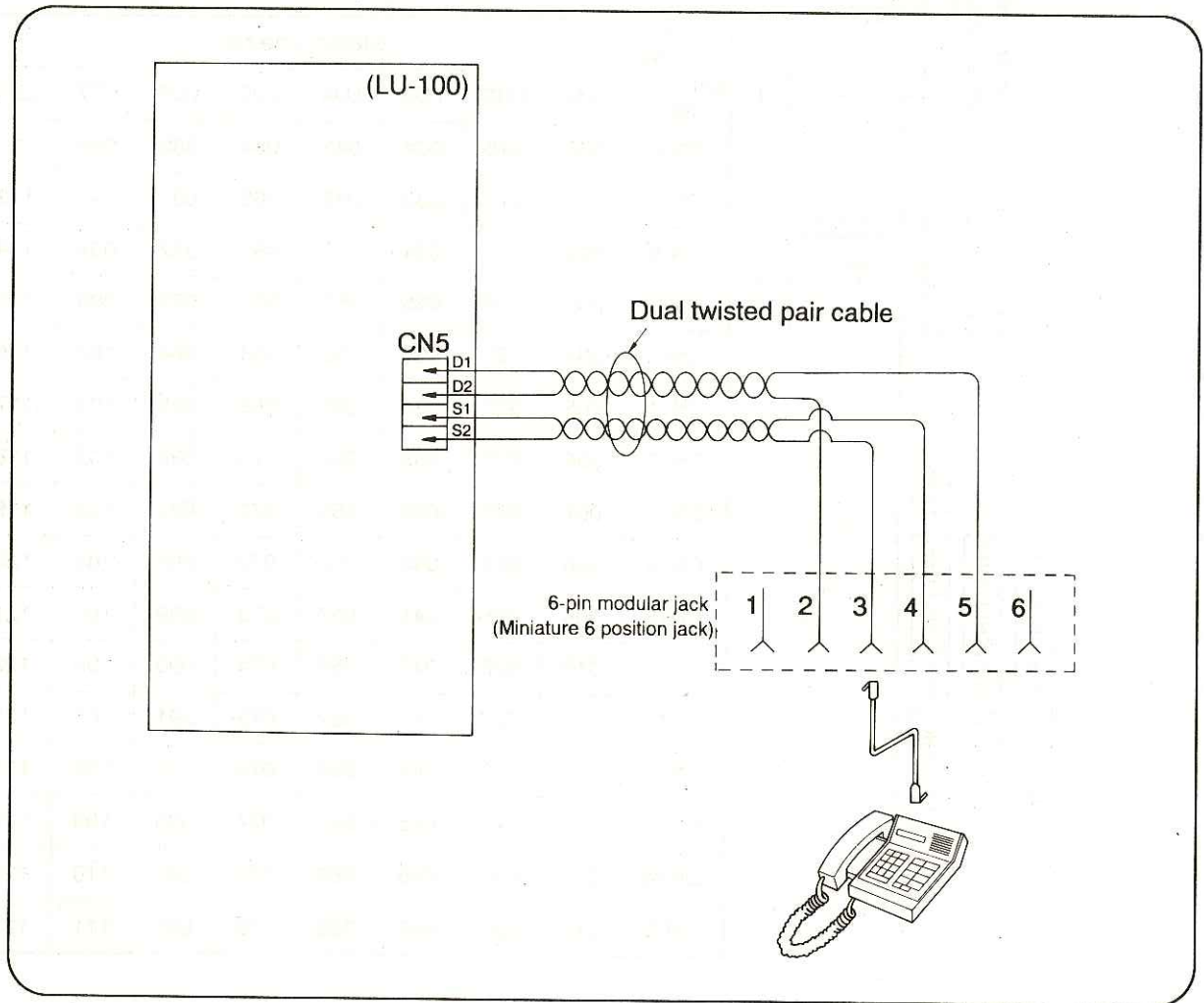
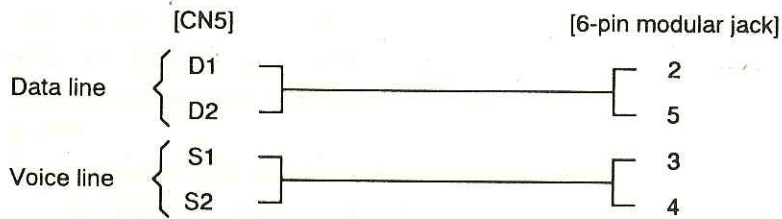


LU No. CN No.	Station Line No.							
	LU1	LU2	LU3	LU4	LU5	LU6	LU7	LU8
CN 6	000	016	032	048	064	080	096	112
CN 7	001	017	033	049	065	081	097	113
CN 8	002	018	034	050	066	082	098	114
CN 9	003	019	035	051	067	083	099	115
CN10	004	020	036	052	068	084	100	116
CN11	005	021	037	053	069	085	101	117
CN12	006	022	038	054	070	086	102	118
CN13	007	023	039	055	071	087	103	119
CN14	008	024	040	056	072	088	104	120
CN15	009	025	041	057	073	089	105	121
CN16	010	026	042	058	074	090	106	122
CN17	011	027	043	059	075	091	107	123
CN18	012	028	044	060	076	092	108	124
CN19	013	029	045	061	077	093	109	125
CN20	014	030	046	062	078	094	110	126
CN 5	015	031	047	063	079	095	111	127



### (3) AS-100 Control Station Connection and No. Setting

Connect the AS-100 as shown below using a 6-pin modular jack.



#### <AS-100 No. Setting>

To enable the AS-100 to properly operate, the same number as that of the LU-100 to which the AS-100 is to be connected has to be registered for the AS-100. Follow the procedures below. (The AS-100 is factory-preset to position "1".)

- (1) Connect the AS-100 to the LU-100.
- (2) Switch on the power of the system.
- (3) Set the [REGISTER] switch to ON.
- (4) Press the [PUSH TO TALK] key.
- (5) Dial the connected LU-100's number.
- (6) Press the [PUSH TO TALK] key.
- (7) Set the [REGISTER] switch to OFF.

Prog mode

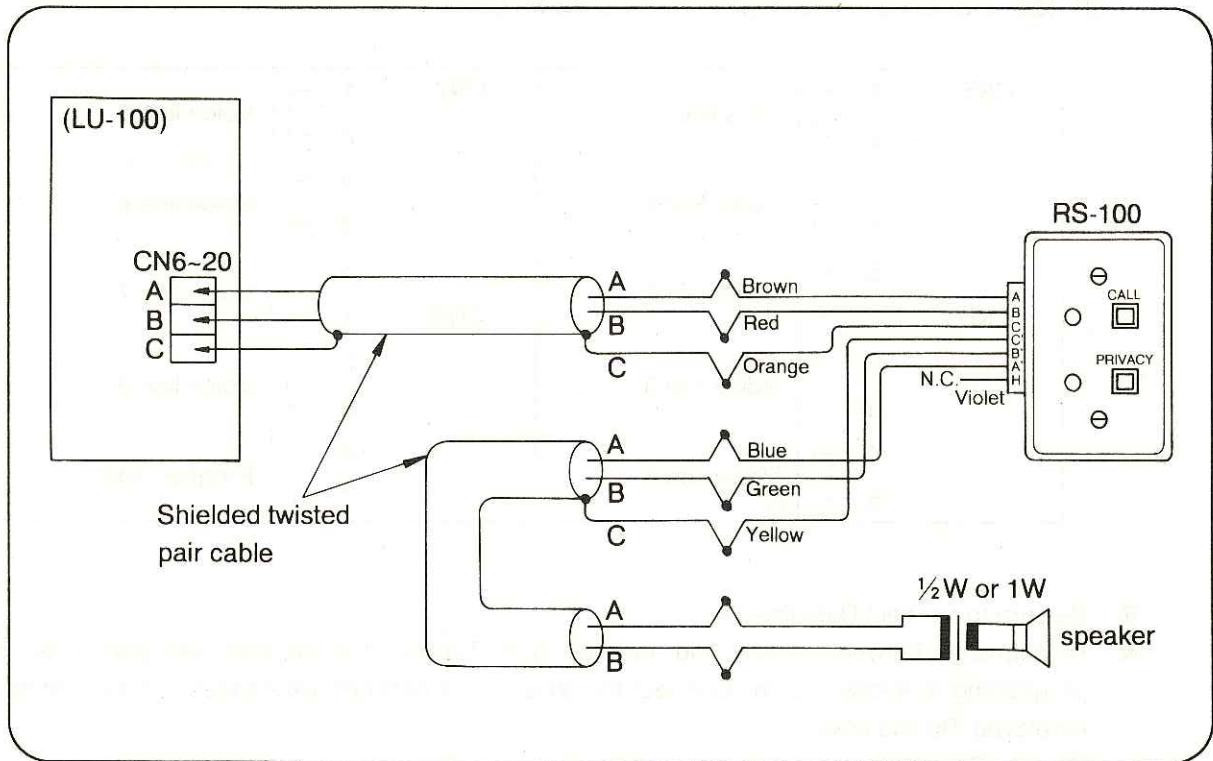
St. addr 1

St. addr

#### (4) RS-100 Switch Panel & RS-110 Sub-station Handset Connection

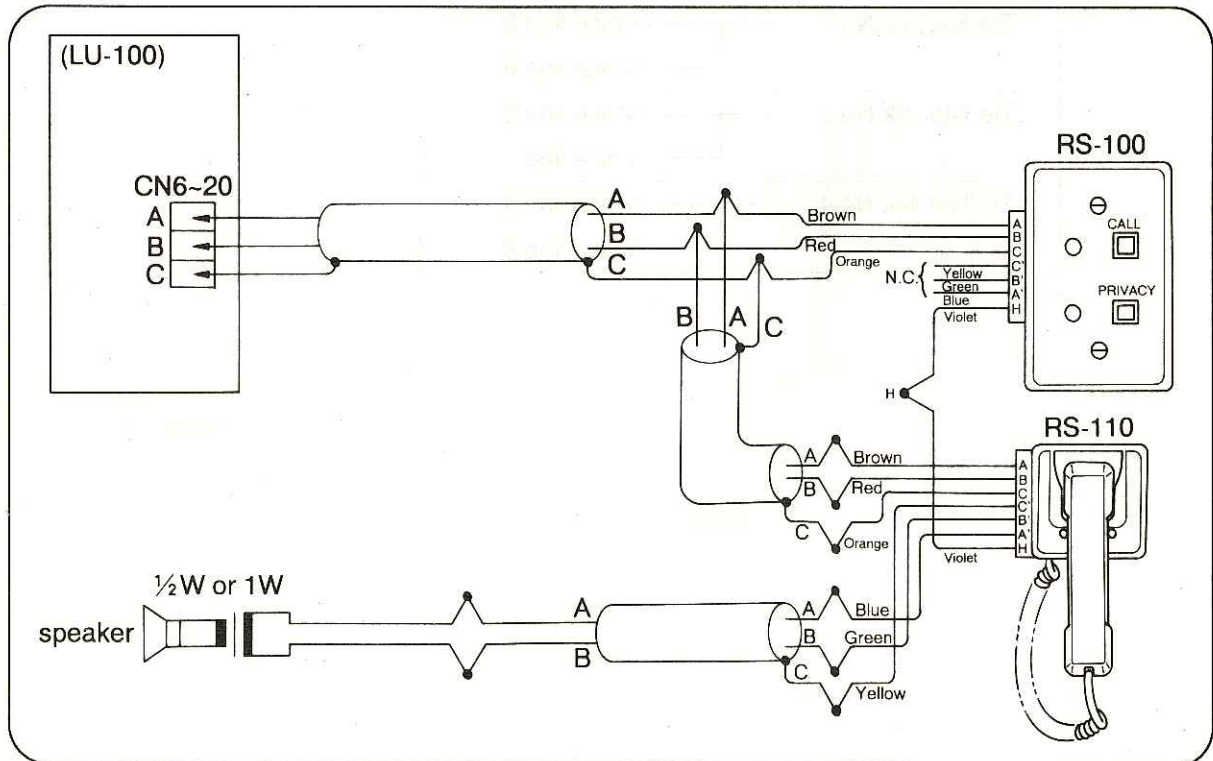
Connect the sub-station to the LU-100 as shown below.

- When not using an RS-110 Sub-station Handset.



- When using an RS-110 Sub-station Handset.

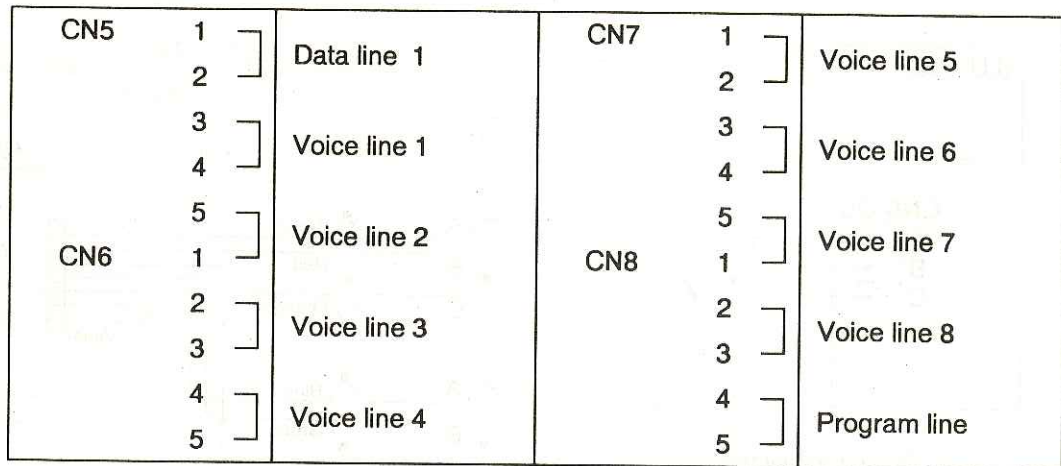
[Note] : Cut out unused wires to avoid short-circuiting.



## 4.4 CT-100 C/O & Tie-line Card Connection

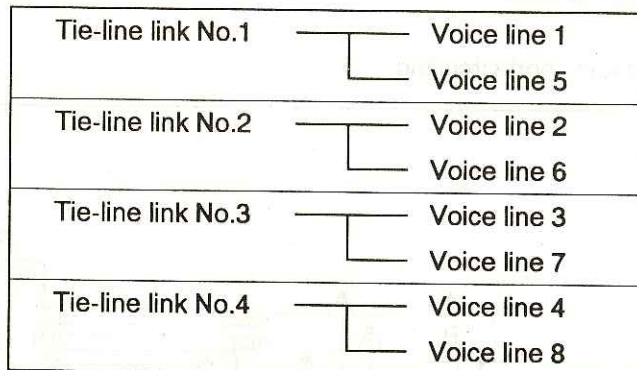
### (1) Tie-line Interface Connection

A maximum of 9 exchanges can be tie-line interconnected using the CT-100 card. Interconnect the CT-100 cards of each exchange system as shown below.



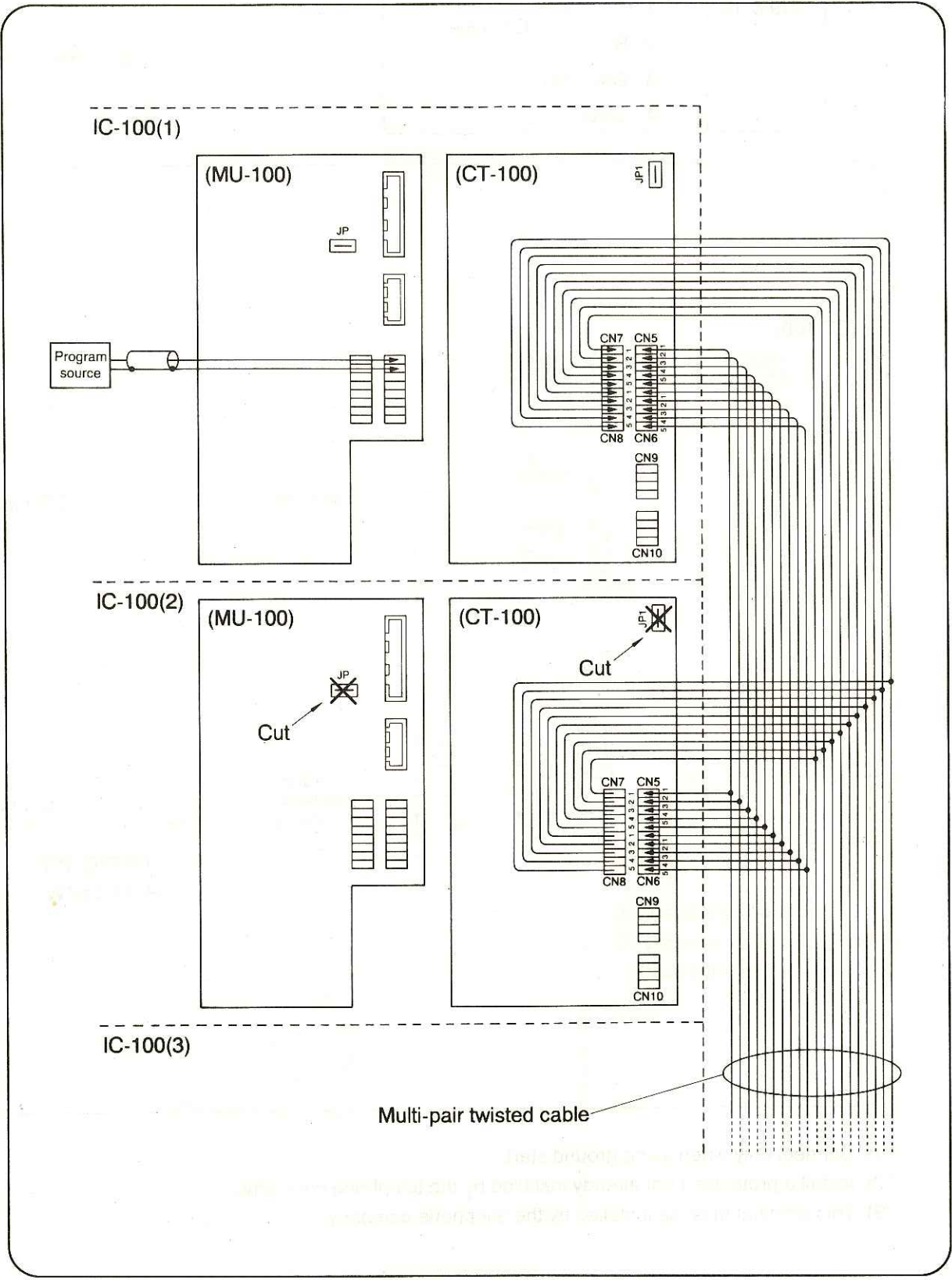
- Be sure to connect Data line 1.
- Relationship between Voice line number and Tie-line link number designated by system programming is shown below. Connect the Voice lines between exchanges corresponding to the employed Tie-line links.

**[Note]** : Be sure to use twisted pair cables for connection.





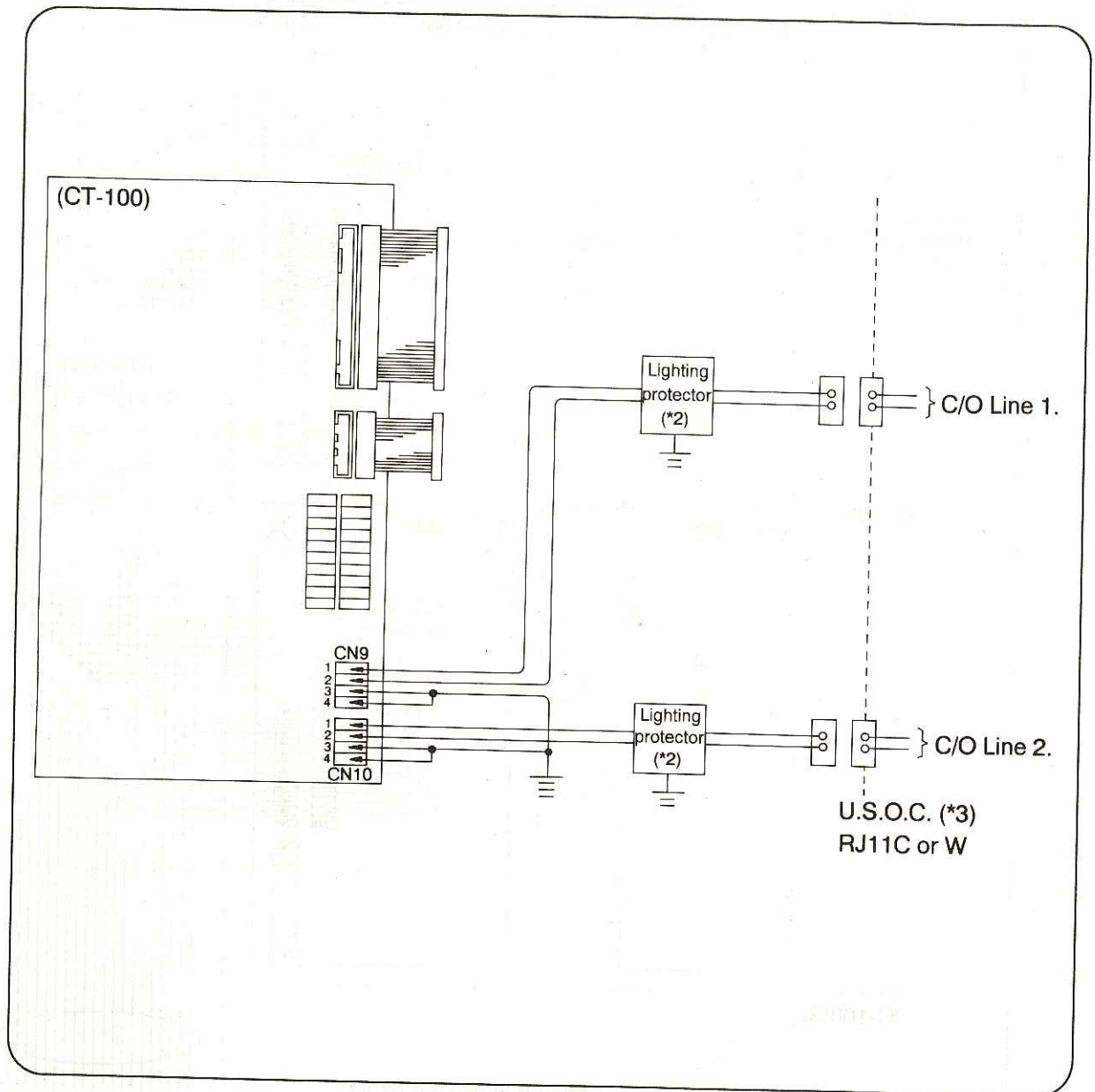
- Program line can be connected if the same program source is to be used for the entire tie-line system. In this case, the JP jumpers on the MU-100 cards on all the exchanges must be cut, except the exchange connected to the program source equipment, and also the JP1 jumpers on the CT-100 cards on all the exchanges must be cut, except the JP1 jumper of the first exchange.



## (2) C/O (outside telephone) Line Interface Connection

The CT-100 can be interfaced with up to two outside telephone lines. Using DTMF tone dialing, it is compatible with both loop and ground start systems. Connect as shown below.

CN9 & 10	1 T	} C/O Line
	2 R	
	3 GND (*1)	
	4 GND	



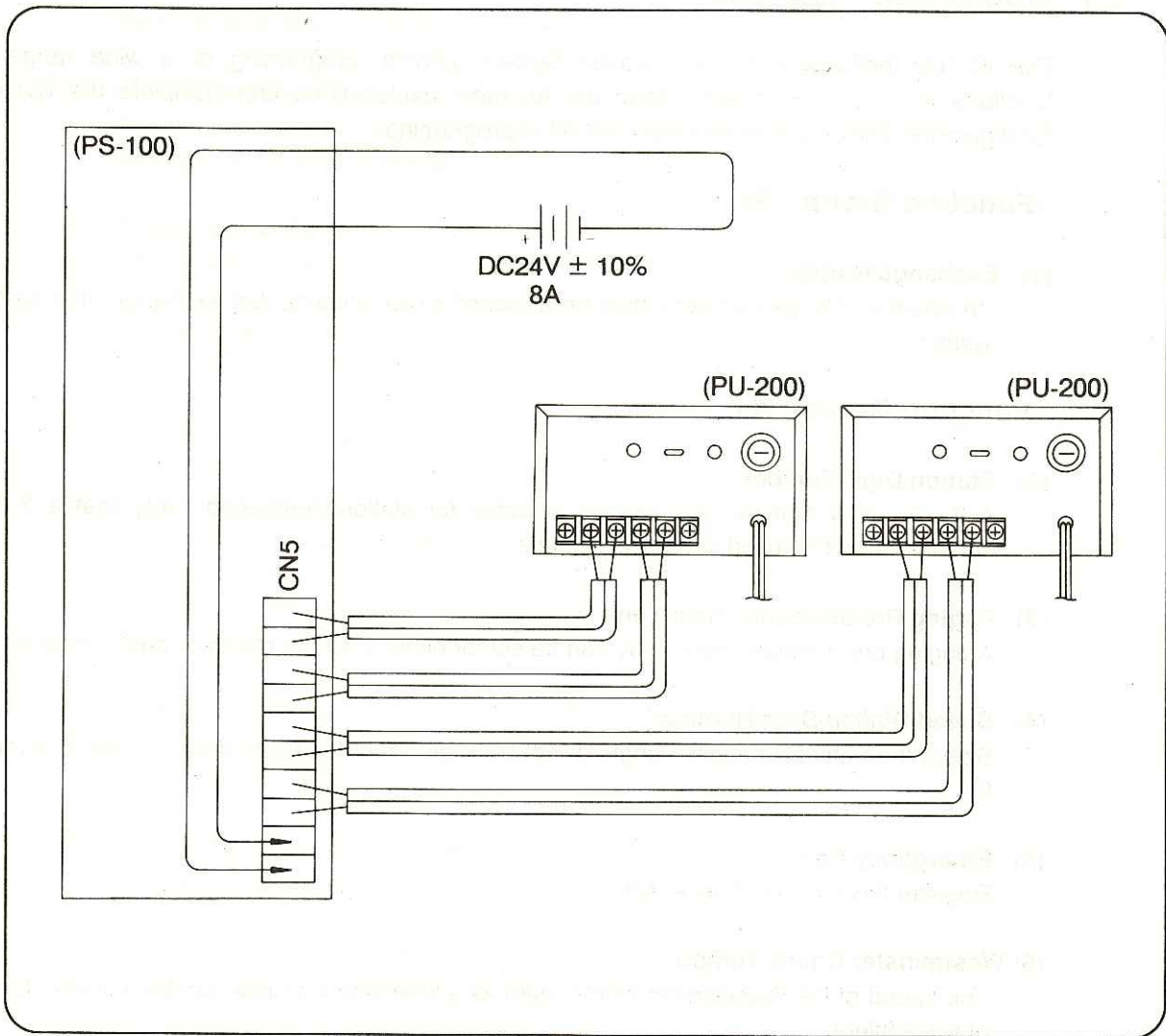
(\*1) Connect only when using ground start.

(\*2) Install a protector if not already installed by the telephone company.

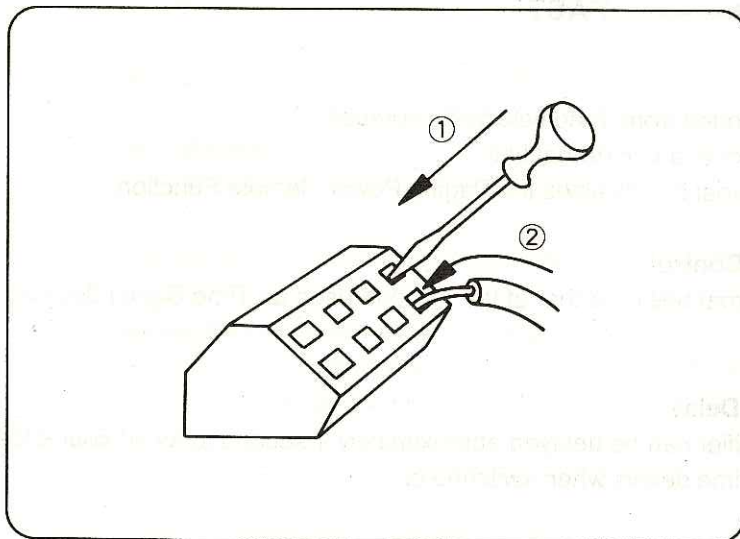
(\*3) This terminal must be installed by the telephone company.

#### 4.5 PS-100 Power Supply Card Connection

The PS-100 is supplied with one DC and four AC inputs. Connect as shown below.



Refer to the illustration below for connection to CN5.



- ① Insert a screwdriver.
- ② Strip the cable and insert the lead into the connector.



## 5. System Programing

### 5.1 Programable Functions

The IC-100 Institutional Communication System permits programing of a wide range of functions to meet user needs. Read the following explanations and complete the System Configuration Tables before commencement of programing.

#### <Function Group : S>

(1) **Exchange Number**

Individual exchange numbers must be assigned to each connected exchange in a tie-line system.

#### <Function Group : A>

(2) **Station Digit Number**

A 2-, 3-, or 4-digit number can be selected for station numbering. Note that a 2-digit number cannot be used in tie-line systems.

(3) **Paging Pre-announcement Tone**

A paging pre-announcement tone can be set for either a 4-note chime or brief single tone.

(4) **Speed Dialing Digit Number**

Select the number of digits (single or double digit), and designate the first digit (0 through 9).

(5) **Emergency Call**

Register this function if necessary.

(6) **Westminster Chime Tempo**

The speed of the Westminster chime used as a time signal source can be adjusted to one of five settings.



(7) **Time Signal Source**

A time signal can be sounded from three selectable sources:  
Westminster chime, trill tone, and external bell.

[Note]: Selection of external bell disables the Paging Power Remote Function.

(8) **External Bell Duration Control**

The duration of the external bell (and that of the trill tone used as Time Signal Source) can be set for 1-99 seconds.

(9) **Paging Power Remote Delay**

Input to the paging amplifier can be delayed approximately 1 second to avoid sound losses caused by amplifier risetime delays when switched on.

(10) **Duress Alarm**

This handset-activated time-delay emergency function may be enabled for the entire system.

## <Function Group : B>

### (11) Time Schedule

Two 256-step time schedules can be programmed into the internal clock.

### (12) Alert Tone Interval

An alert tone can be transmitted to all in-use room stations at a variable interval of 10~990 seconds (in 10-second steps).

### (13) Conversation Time-out

Conversation time can be restricted to 1~99 minutes (in 1 minute steps).

### (14) Calling Time-out

Call tone duration can be set for 1~99 minutes (in 1 minute steps).

## <Function Group : C>

### (15) Station Numbering

Station Nos. can be assigned 2-digit (00~99), 3-digit (000~999), or 4-digit (0000~9999) designations. In tie-line systems, the first digit represents the station's exchange assignment, and is set under <Function Group : F>.

**Note:** The number of the fixed line leading to a station (as opposed to that of the station itself) is referred to as the "Station Line No." Station Line Nos. are used only in programming operations.

### (16) Station Type and Priority Level

Five different types of stations can be selected:

- (a) Station without handset:  
Sub-station consisting of only RS-100 and remote speaker.
- (b) Station with handset:  
Combination of RS-100, RS-110 and remote speaker.
- (c) Control station with restricted function access:  
AS-100 with Variable Priority setting, Time Schedule selection, and time change functions disabled.
- (d) Control station with unrestricted function access:  
AS-100 with access to all available functions.
- (e) Modified HF-200M:  
A modified version of the HF-200M station.

The sub-station's Fixed Priority can be set for "ALARM", "NORMAL", or "STAFF".

### (17) Sub-station/Control Station Designation

Any control station in a single or tie-line system can be designated as the called control station when a sub-station call button is pressed.

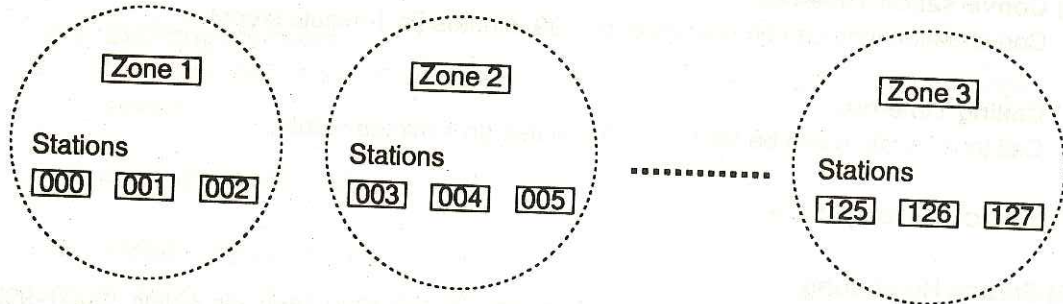


<Function Group : D>

**(18) Station Zone Assignment**

Up to nine individual broadcast zones for paging, time signal and program source can be established. Register the stations to be assigned to each zone using only consecutive numbers within the same exchange.

**[Example]**

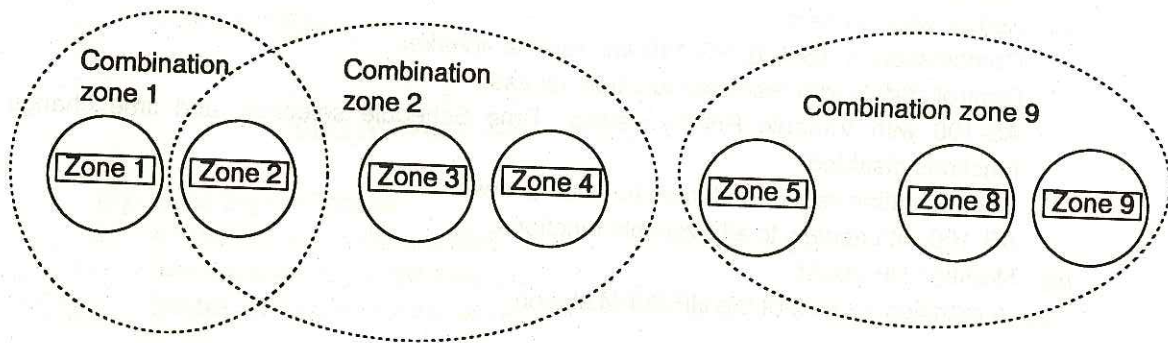


Up to nine zones can be established in tie-line system. Exchange zone numbers are registered under <Function Group : F>.

**(19) Combination Zones**

Any or all of the zones in a single-exchange or tie-line system can be combined into each of up to nine combination zones.

**[Example]**



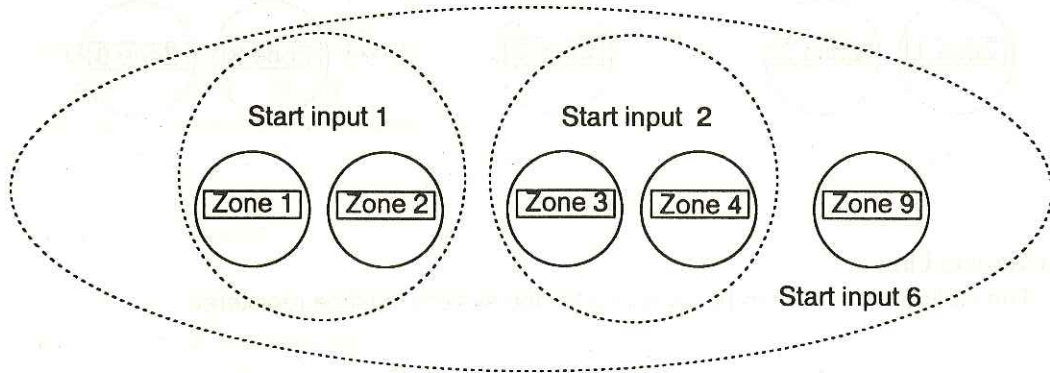


**<Function Group : E>**

**(20) External Time Signal Trigger**

Time signal transmission can be activated by external trigger sources such as a switch or timer. Six external trigger inputs are made available, with any combination of up to nine zones assignable to each trigger input.

**[Example]**



**(21) Outgoing C/O (Telephone) Line Access**

The outside and control station line numbers of an exchange can be registered to provide access to outside C/O lines for outgoing calls.

**(22) Incoming C/O (Telephone) Call Access**

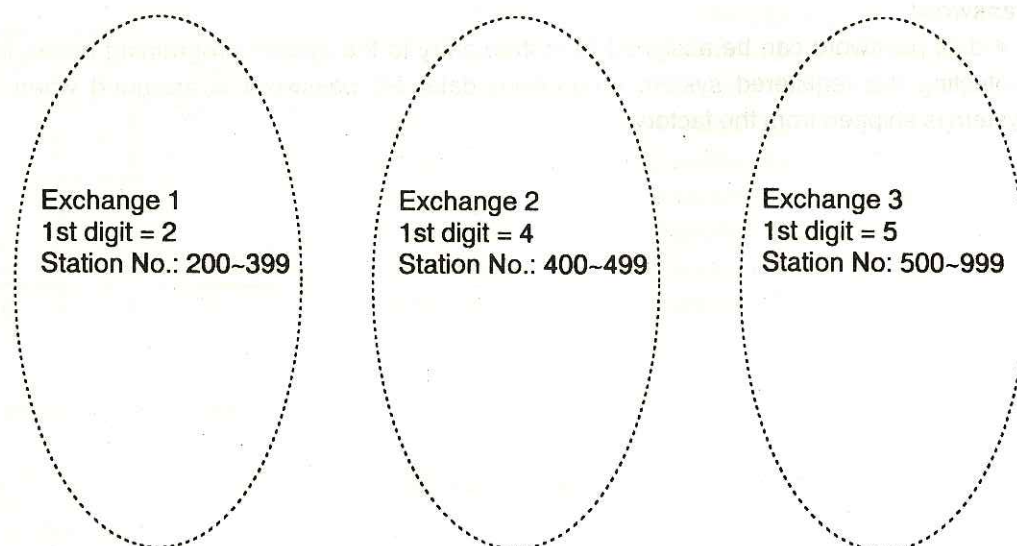
Control station line numbers can be registered to receive incoming outside calls. Up to nine station line numbers on an exchange can be registered per outside line.

**<Function Group : F>**

**(23) Station No. Exchange Registration**

In a single-exchange or tie-line system, the prefix number assigned to an exchange dictates the first digit and grouping of its assigned station numbers.

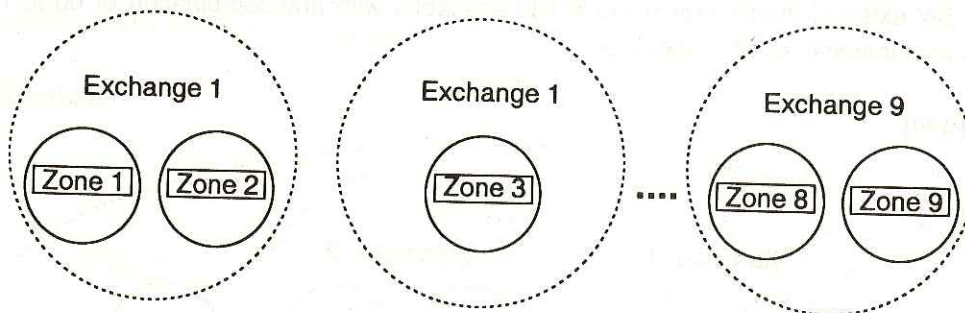
**[Example]**



**(24) Exchange Zone Assignment**

Individual zone numbers can be assigned to each exchange in a tie-line system.

**[Example]**



**(25) Tie-line Link**

The tie-line links (1~4) to be used in a tie-line system must be registered.

**<Function Group : G>**

**(26) Speed Dialing Memory Deletion**

All speed dialing memory data can be deleted.

**(27) Call Forwarding Memory Deletion**

All Call Forwarding data stored in memory can be deleted.

**(28) Time Setting**

The internal clock's time and hour designation (12hr or 24hr), as well as the day of the week can be set.

**(29) Time Schedule**

"A", "B" or "No schedule" time schedules can be designated.

**<Function Group : H>**

**(30) Password**

A 4-digit password can be assigned to restrict entry to the system programming mode, thus protecting the registered system programming data. No password is assigned when the system is shipped from the factory.



## 5.2 Programing Operation

### (1) Programing Mode Entry

\* Tie-line systems require the programing operation in this section to be performed for all exchanges.

KEY OPERATION	DISPLAY
① Set the [REGISTER] switch at the rear of the control station corresponding to Station Line No. 15 (connected to the first LU-100) to ON.	Prog mode
② Press the [PUSH TO TALK] key.	St. addr 1
③ Dial [1] if the control station's address is not 1.	
④ Press the [PUSH TO TALK] key. The display changes as shown at right, indicating that the control station is in the programing mode.	*

### (2) Function Reset

To reset a function group to its initial settings, depress the [\*] key and enter the group's function code followed by the [C/#] and [PUSH TO TALK] keys. A confirmation tone will then sound to indicate reset completion.

#### ① Exchange number settings

(A) For "Single-exchange system"

[\*] [0] [0] [C/#] [PUSH TO TALK] Confirmation tone (Function Group "S" reset for Single-exchange system)

(B) For "Tie-line system"

[\*] [0] [1] [X] [Y] Confirmation tone (Function Group "S" reset for Tie-line system)  
Total exchange Nos. Exchange No.

②	[*]	[1]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "A" reset.)
③	[*]	[2]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "B" reset.)
④	[*]	[3]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "C" reset.)
⑤	[*]	[4]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "D" reset.)
⑥	[*]	[5]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "E" reset.)
⑦	[*]	[6]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "F" reset.)
⑧	[*]	[7]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "I" reset.)
⑨	[*]	[8]	[0]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "G" reset.)
⑩	[*]	[9]	[9]	[C/#]	[PUSH TO TALK]	Confirmation tone	(Function Group "H" reset.)

To reset an individual function:

⑪ [\*] [X] [Y] [C/#] [PUSH TO TALK] Confirmation tone (Designated function reset.)  
Function code  
X : 0-9  
Y : 1-9



### (3) Function Registration

Function Group	Function	Function Code	Key Operation	Initial Setting *1
<b>S</b>	Exchange Number	0 1	1. Single-exchange system : * 0 1 1 2. Tie-line system : * 0 1 X Y X : Total exchange numbers Y : Exchange No.	—
<b>A</b> *3	Station Digit Number	1 1	* 1 1 <input type="checkbox"/> 2 : 2-digit, 3 : 3-digit, 4 : 4-digit	3-digit
	Paging Pre-announcement Tone	1 2	* 1 2 <input type="checkbox"/> 1 : 4-note chime 2 : Single tone	4-note chime
	Speed Dialing	1 3	* 1 3 <input type="checkbox"/> <input type="checkbox"/> 1 : 1-digit dialing <input type="checkbox"/> 2 : 2-digit dialing      1st digit No : 0-9	Disabled
	Emergency Call	1 4	* 1 4 <input type="checkbox"/> 0 : OFF, 1 : ON	Disabled
	Westminster Chime Tempo	1 5	* 1 5 <input type="checkbox"/> 1-5	3
	Time Signal Source	1 6	* 1 6 <input type="checkbox"/> 1 : Westminster chime      4: TRILL + EXT BELL 2 : Trill tone 3 : External Bell	Westminster chime
	External Bell Duration Control	1 7	* 1 7 <input type="checkbox"/> <input type="checkbox"/> 01-99 sec.	1 sec.
	Paging Power Remote Delay	1 8	* 1 8 <input type="checkbox"/> 0 : OFF, 1 : ON	Disabled
Duress Alarm	1 9	* 1 9 <input type="checkbox"/> 0 : OFF, 1 : ON	Disabled	
<b>B</b>	Time Schedule *4	2 1	Refer to Section 5.3 on page 38-39.	—
	Alert Tone Interval *3	2 2	* 2 2 <input type="checkbox"/> <input type="checkbox"/> 00-99 00 : No alert, 01-99 : 10-990 sec.	No alert
	Conversation Time-out *3	2 3	* 2 3 <input type="checkbox"/> <input type="checkbox"/> 00-99 00 : No limit, 01-99 : 1-99 min.	No limit
	Calling Time-out *3	2 4	* 2 4 <input type="checkbox"/> <input type="checkbox"/> 00-99 00 : No limit, 01-99 : 1-99 min.	No limit

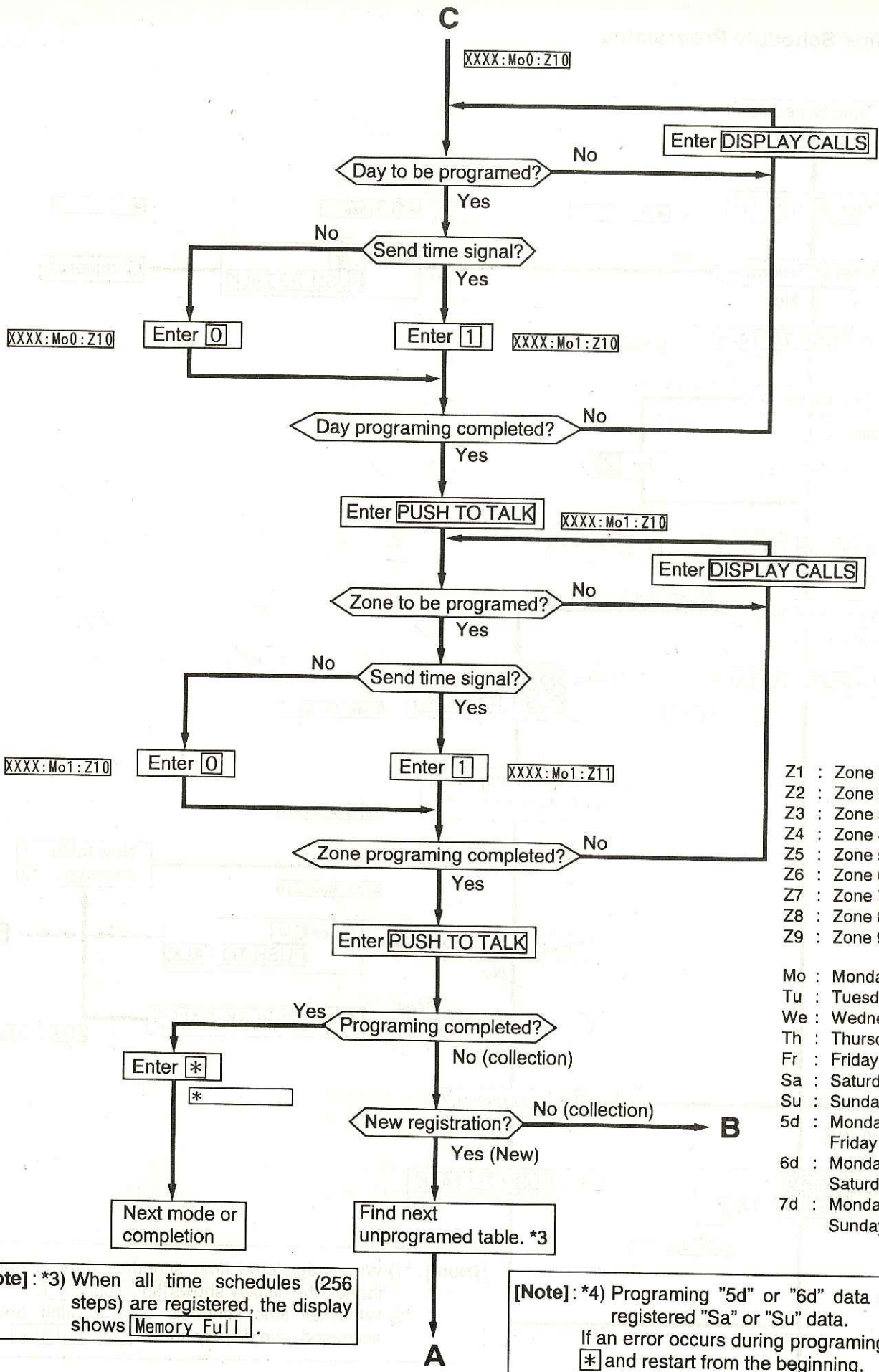












- Z1 : Zone 1
- Z2 : Zone 2
- Z3 : Zone 3
- Z4 : Zone 4
- Z5 : Zone 5
- Z6 : Zone 6
- Z7 : Zone 7
- Z8 : Zone 8
- Z9 : Zone 9
  
- Mo : Monday
- Tu : Tuesday
- We : Wednesday
- Th : Thursday
- Fr : Friday
- Sa : Saturday
- Su : Sunday
- 5d : Monday to Friday (\*4)
- 6d : Monday to Saturday (\*4)
- 7d : Monday to Sunday

[Note]: \*3) When all time schedules (256 steps) are registered, the display shows **Memory Full**.

[Note]: \*4) Programming "5d" or "6d" data deletes registered "Sa" or "Su" data. If an error occurs during programming, enter **\*** and restart from the beginning.



## 5.4 Programming Examples

(1) Register time schedules using the following tables.

No.	Time	Day of the week							Zone						
		Mo	Tu	We	Th	Fr	Sa	Su	Z1	Z2	Z3	Z4	Z5	Z6	Z7
1	8:45	○	○	○	-	-	-	-	○	-	○	-	-	-	-
2	10:00	○	-	○	○	-	-	○	○	○	-	-	-	-	
3	11:00	○	○	○	○	○	○	-	-	-	○	○	○	○	
4	12:00	○	○	○	○	○	○	-	○	○	○	○	-	○	

[Note] : To program data of Item No.1 indicated by an arrow in the above table, follow the procedures below.

DIAL OPERATION		DISPLAY
①	* 2 1	*21
②	PUSH TO TALK	Schedule: <input type="checkbox"/>
③	1	Schedule: A
④	PUSH TO TALK	Time: --:-- <input type="checkbox"/>
⑤	PUSH TO TALK	--- <input type="checkbox"/> :Mo0:Z10
⑥	0 8 4 5 PUSH TO TALK	0845:Mo <input type="checkbox"/> :Z10
⑦	1	0845:Mo1:Z10
⑧	DISPLAY CALALS	0845:Tu <input type="checkbox"/> :Z10
⑨	1	0845:Tu1:Z10
⑩	DISPLAY CALLS	0845:We <input type="checkbox"/> :Z10
⑪	1	0845:We1:Z10
⑫	PUSH TO TALK	0845:We1:Z1 <input type="checkbox"/>
⑬	1	0845:We1:Z11
⑭	DISPLAY CALLS	0845:We1:Z2 <input type="checkbox"/>
⑮	0	0845:We1:Z20
⑯	DISPLAY CALLS	0845:We1:Z3 <input type="checkbox"/>
⑰	1	0845:We1:Z31
⑱	PUSH TO TALK	--- <input type="checkbox"/> :Mo0:Z10

[Note] : Flashing  marker is replaced with the number entered.

(2) Register the following station numbers.

Station Line No.	Station No.
000	200
001	203
002	210
003	211
004	212
005	213
006	214
007	215



**DIAL OPERATION**

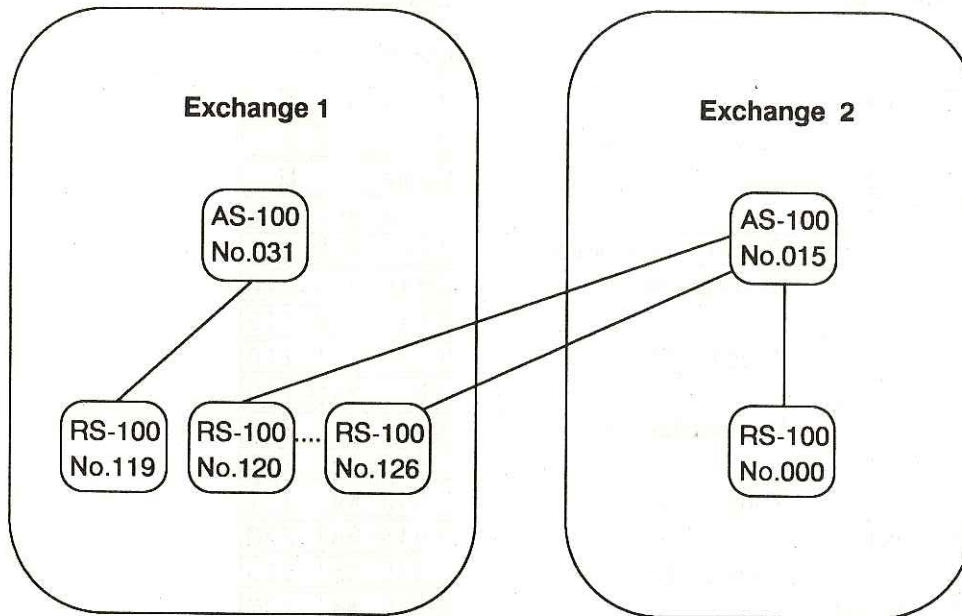
- ① \* 3 1
  - ② 0 0 0
  - ③ 2 0 0
  - ④ 2 0 3
  - ⑤ PUSH TO TALK
  - ⑥ 2 1 0
  - ⑦ 0 0 7
- Line No.  
Station No.
- Station No.
- Consecutive No.  
registration mode
- First station No.  
Last line No.

**DISPLAY**

```

*31:
*31:000:
*31:000:200
*31:001
*31:001:203
*31:002
002:
002:210
007:
007:215
    
```

(3) Register connected tie-line system control stations (AS-100) and sub-stations (RS-100)



**DIAL OPERATION**

(From Exchange 1, Control station Line No. 15)

- ① \* 3 3
  - ② 1 1 9
  - ③ 1 0 3 1
  - ④ PUSH TO TALK
  - ⑤ 2 0 1 5
  - ⑥ 1 2 6
- RS-100's Line No.  
Exchange No. and  
AS-100 line No.
- Consecutive No.  
registration mode
- Exchange No. and  
AS-100 line No.
- Last RS-100 line No.

**DISPLAY**

```

*33:
*33:119:
*33:119:1031
*33:120
120:
120:2015
126:
126:2015
    
```

**DIAL OPERATION**  
(From Exchange 2, Control station Line No. 15)

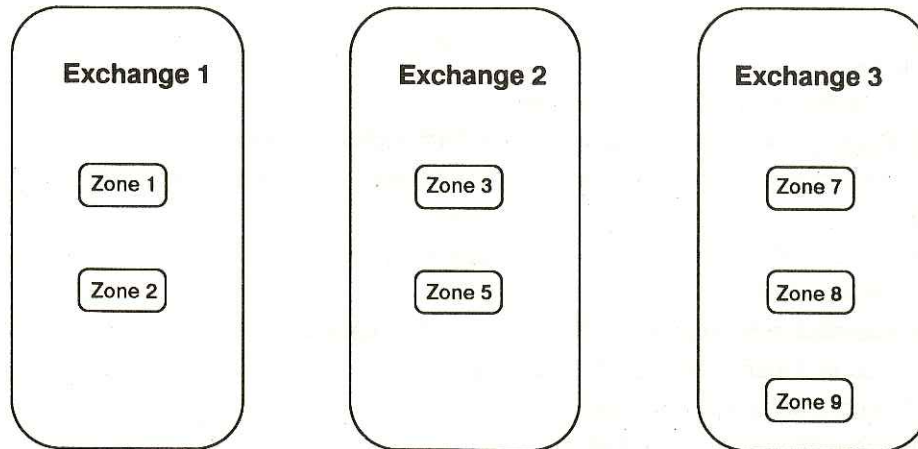
**DISPLAY**

① \* 3 3  
② 0 0 0  
③ 2 0 1 5

RS-100's Line No.  
Exchange No. and  
AS-100 line No.

\*33:  
\*33:000:  
\*33:000:2015

(4) Register the following tie-line system exchange zones.



**DIAL OPERATION**

**DISPLAY**

① \* 6 2  
② 1 1 2 0 2 0 3 3 3

\*62:  
112020333

## 5.5 Operating Precautions

- (1) If an error occurs during programing, enter \* 

X
---

Y
---

 and restart from the beginning.  
Function  
Code
- (2) No programing can be performed during conversation (or while the in-use indicator lamp remains lit) even if the [REGISTER] switch is turned ON. Enter the programing mode after terminating the conversation.
- (3) All incoming calls to the station in programing mode will be ignored. (Emergency calls can still be displayed.)
- (4) Do not switch power off for at least one minute after programing completion ([REGISTER] switch OFF).
- (5) If an emergency all-call paging is received during programing operation, turn the [REGISTER] switch OFF and restart from the beginning after the emergency all-call paging is terminated.

## 6. Operation Check

Perform operation checks from all connected control stations and sub-stations after system programming completion. Be sure to write the test results in the installation registration chart for future reference.

### 6.1 Voice and Function Tests

#### ● Voice Test

Communicate between the control station and its designated sub-stations, and also between the control station and other control stations to check the sound volume and quality.

Adjust the control station's microphone sensitivity or speaker volume using its semi-fixed volume control.

#### <Test Procedure>

- (1) Call the sub-station from the control station.
- (2) Press the **PUSH TO TALK** key to initiate manual half-duplex conversation.
- (3) Pick up the control station's handset to initiate automatic voice-activated semi-duplex conversation.
- (4) Pick up a sub-station handset to initiate full-duplex conversation.
- (5) Replace both handsets.
- (6) Press the sub-station's **CALL** switch to call the control station.
- (7) Pick up the control station handset for conversation.
- (8) Replace the control station's handset.
- (9) Press the sub-station's **PRIVACY** switch.
- (10) Call the sub-station from the control station.

#### ● Function Test

Referring to the operation manual, check to confirm that the functions to be used operate correctly. Check also for correct system programming, such as paging zone assignment.



## 6.2 Troubleshooting

When troubles occur during installation, refer to the following checklist to determine the cause.

Symptom	Cause
LED does not flash when sub-station's <b>CALL</b> switch is pressed.	Improper connection of A- or C-wire.
LED does not light when sub-station's <b>PRIVACY</b> switch is pressed.	Improper connection of B- or C-wire.
Emergency call is made to control station without pressing sub-station's <b>CALL</b> switch.	Short of A- and C-wires or A-wire and ground.
Station is put in privacy mode without pressing sub-station's <b>PRIVACY</b> switch.	Short of B- and C-wires or B-wire and ground.
Emergency call is made when sub-station's <b>PRIVACY</b> switch is pressed.	Connection of A- and C-wires reversed.
Sub-station's LED does not light when handset is lifted.	Improper H-wire connection.
No characters on control station LCD.	Improper voice line connection.
Inaccurate time display.	Improper data line connection.
In-use lamp does not light when control station dialed.	Improper setting of LU-100's SW1 or control station numbers.
Noise heard at sub-station when called from control station.	Improper sub-station connection.
No speaker output, although call can be made from sub-station.	B-wire is not connected.
CK-100's front-mounted LED does not flash.	Power cord is not plugged in AC outlet.



TOA Corporation  
KOBE, JAPAN

E2.0

133-06-179-0B