

SERVICE MANUAL

TOA IC-100 INSTITUTIONAL COMMUNICATION SYSTEM

No. 833-72-145-50

CONTROL STATIONS

AS-100A

AS-110

DIRECT SELECT INTERFACE UNITS

DI-100

DI-110

SUB-STATIONS

RS-120

RS-130

CONTROL UNIT

MU-110

Sold 1992 June onward



TOA Corporation
KOBE, JAPAN

Printed in Japan ASHS09304700E

1. CONTROL STATIONS AS-100A, AS-110

■ General Description

The AS-100A/AS-110 Control Stations provide full-duplex communication capability with remote sub-station handsets and other control stations, and half-duplex communication capability with remote sub-station speakers. Its eight function keys enhance operating ease, and its 12-digit LCD display shows dialing data, display priorities, and current time. It can be connected with a standard dual twisted pair cable.

■ SPECIFICATIONS

AS-100A

Power Requirements	24 V DC, 30 mA (powered from exchange)
Handset Transmitter & Receiver	Dynamic type, 130 Ω each
Internal Speaker	Dynamic type, 8 Ω , ϕ 57 mm (ϕ 2.25") 0.6 W
Internal Microphone	Electret condenser type
Key Pad	Membrane key switch
Speaker Volume Control	H/L selectable
External Input	External microphone or headset
Display	LCD, 12 digits
Wiring	Twisted 2 pairs, nonpolar
Operating Temperature	0 °C ~40 °C (32 °F ~104 °F)
Finish	ABS resin, pale white
Dimensions (W × H × D)	216 (8.50") × 74.5 (2.93") × 213 (8.39") mm
Weight	960 g (2.12 lb.)
Accessories	Wall mounting bracket 1 Connection cord with modular plugs 1 Wood screw 2

* Specifications are subject to change without notice.

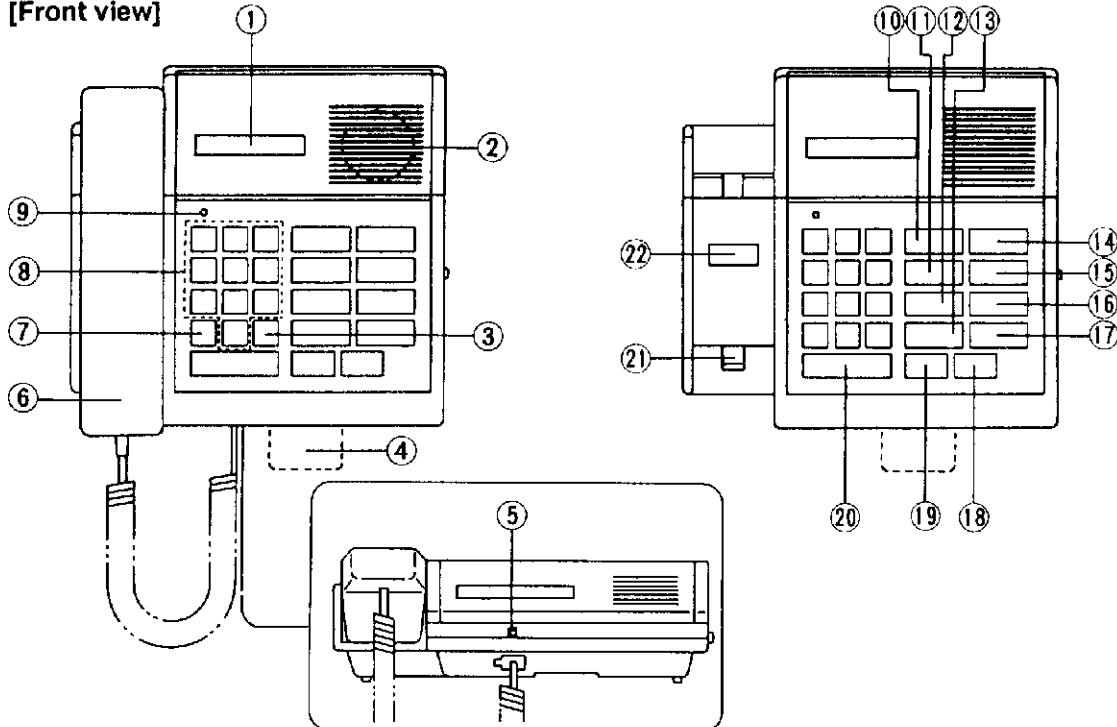
AS-110

Power Requirements	24 V DC, 30 mA (powered from exchange)
Handset Transmitter & Receiver	Dynamic type, 130 Ω each
Internal Speaker	Dynamic type, 8 Ω , ϕ 57 mm (ϕ 2.25") 0.6 W
Internal Microphone	Electret condenser type
Key Pad	Membrane key switch
External Input	External microphone or headset
Display	LCD, 12 digits
Wiring	Twisted 2 pairs, nonpolar
Ambient Temperature	0 °C ~40 °C (32 °F ~104 °F)
Finish	White painted
Dimensions (W × H × D)	240 (9.45") × 266 (10.47") × 84 (3.31") mm
Weight	2.6 kg (5.73 lb.)
Accessories	Mounting bracket..... 2 Binding head screw M4 × 8..... 4 Cable bushing..... 1 Binding head screw M3 × 6..... 2 Wood screw..... 4 Washer..... 4 Cord clamp..... 1 Terminal cover..... 1

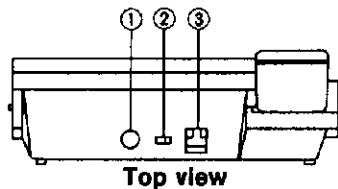
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■ NOMENCLATURE AND FUNCTIONS

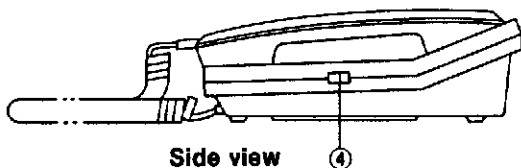
(1) AS-100A Control Station (Desk/Wall-Mount Type) [Front view]



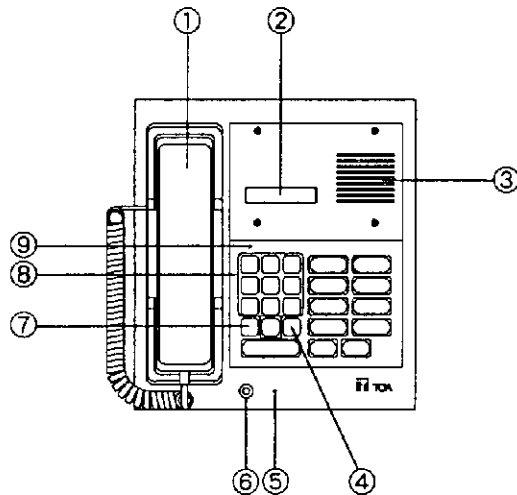
- ① **Display panel** : Shows connection status and registered data.
- ② **Internal speaker** : Sounds call tones and permits "handsfree" conversation.
- ③ **[C/#] key** : Terminates calls and accesses special C/O line functions as well as other special programming functions.
- ④ **Station number directory**
- ⑤ **Internal microphone** : Used in "handsfree" operation.
- ⑥ **Handset**
- ⑦ **[*] key** : Used for privacy mode selection and other special programming functions.
- ⑧ **[0]~[9] keypad** : Used for dialing.
- ⑨ **In-use lamp**
- ⑩ **[DISPLAY CALLS] key** : Displays waiting station numbers, as well as registered data.
- ⑪ **[TELEPHONE] key** : Accesses outside telephone lines.
- ⑫ **[CONFERENCE] key** : Used to enable conference function.
- ⑬ **[PAGE] key** : Used for paging.
- ⑭ **[TIME FUNCTION] key** : Selects pre-programmed time schedules ; Permits manual operation of time signals.
- ⑮ **[REDIAL] key** : Automatically redials last dialed number.
- ⑯ **[PROGRAM] key** : Programs zone distribution of program source.
- ⑰ **[PRIORITY] key** : Establishes sub-station priority.
- ⑱ **[ALL] key** : Broadcasts paging, time signal, and program source over entire area.
- ⑲ **[ZONE] key** : Broadcasts paging, time signal, and program source to selected zones.
- ⑳ **[PUSH TO TALK] key** : Used in PTT operation ; Permits contact with stations in privacy mode ; Selects and dials displayed station.
- ㉑ **Hook switch**
- ㉒ **Station number card**



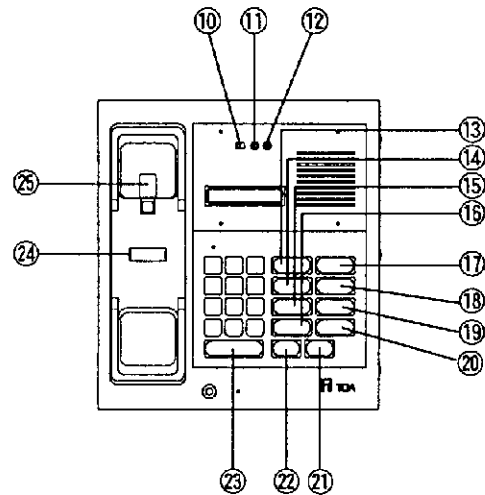
- ① **[EXTERNAL MIC/HEADSET]** : External microphone or headset jack.
- ② **[REGISTER ON/OFF]** : Enables or disables system programming functions. Normally set to OFF.
- ③ **[LINE] connector** : Used for connection to exchange.
- ④ **[SP.VOL.(H/L)]** : Internal speaker volume selection.



[Front view]



[Front view without a speaker cover]

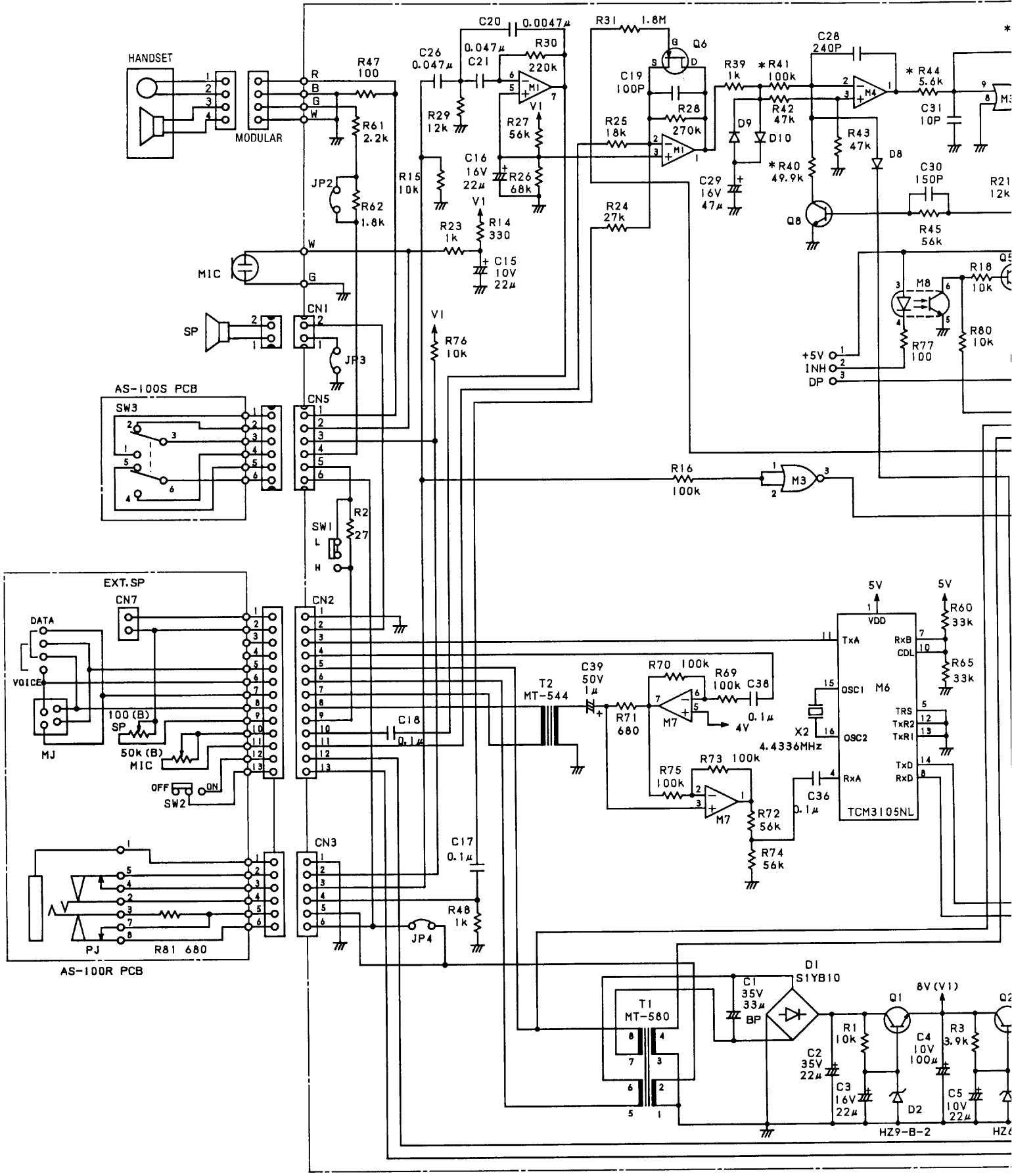


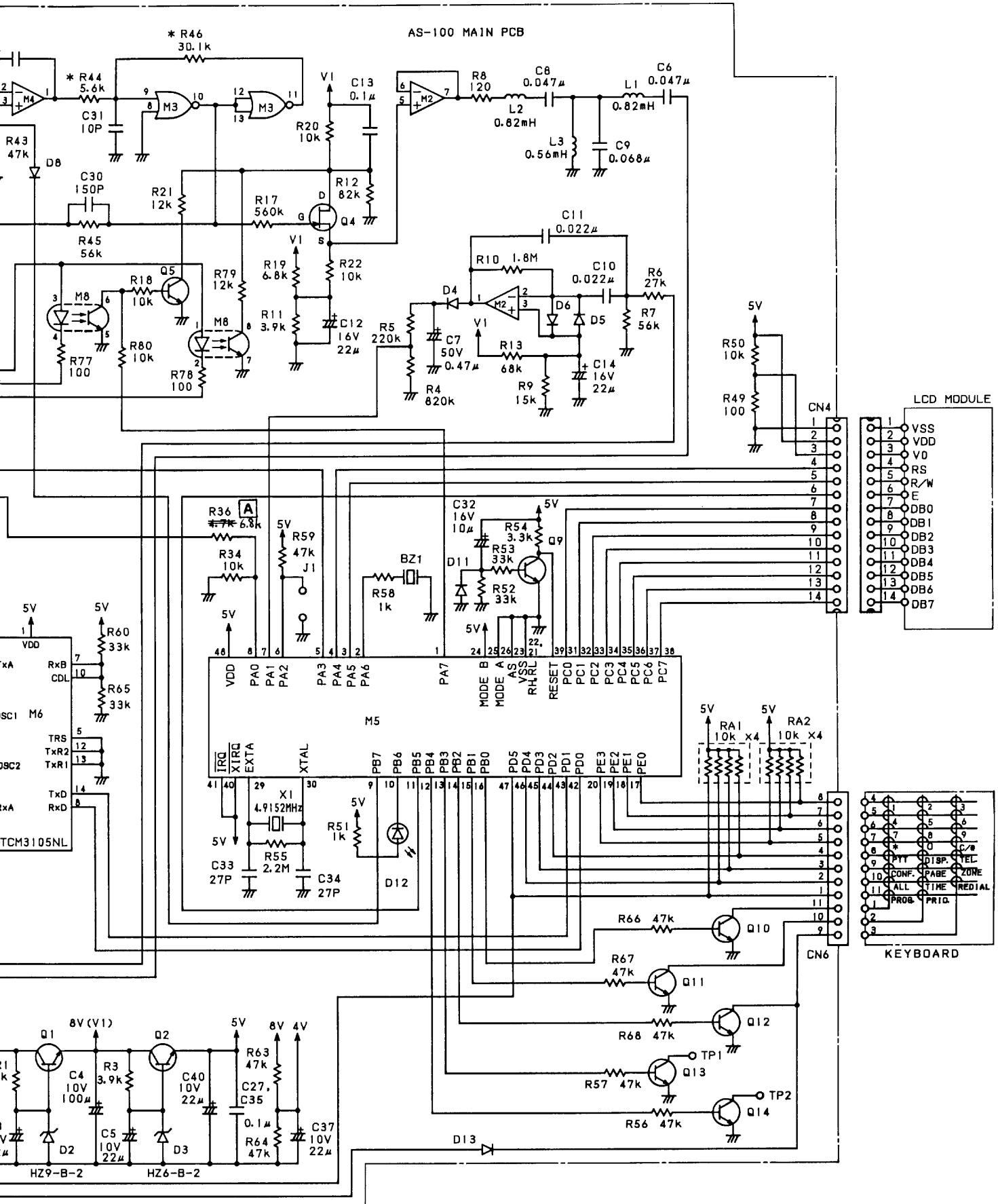
- ① **Handset**
- ② **Display panel** : Shows connection status and registered data.
- ③ **Internal speaker** : Sounds call tones and permits "handsfree" conversation.
- ④ **[C/#] key** : Terminates calls and accesses special C/O line functions as well as other special programming functions.
- ⑤ **Internal microphone** : Used in "handsfree" operation.
- ⑥ **[EXTERNAL MIC/HEADSET] jack** : External microphone or headset jack.
- ⑦ **[*] key** : Used for privacy mode selection and other special programming functions.
- ⑧ **[0]~[9] keypad** : Used for dialing.
- ⑨ **In-use lamp**
- ⑩ **[REGISTER ON/OFF] switch** : Enables or disables system programming functions. Normally set to OFF.
- ⑪ **[SP]** : Adjusts internal speaker volume.
- ⑫ **[MIC]** : Adjusts microphone sensitivity.
- ⑬ **[DISPLAY CALLS] key** : Displays waiting station numbers, as well as registered data.
- ⑭ **[TELEPHONE] key** : Accesses outside telephone lines.
- ⑮ **[CONFERENCE] key** : Used to enable conference function.
- ⑯ **[PAGE] key** : Used for paging.
- ⑰ **[TIME FUNCTION] key** : Selects pre-programmed time schedules ; Permits manual operation of time signals.
- ⑱ **[REDIAL] key** : Automatically redials last dialed number.
- ⑲ **[PROGRAM] key** : Programs zone distribution of program source.
- ⑳ **[PRIORITY] key** : Establishes sub-station priority.
- ㉑ **[ALL] key** : Broadcasts paging, time signal, and program source over entire area.
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- ㉔ **Station number card**
- ㉕ **Hook switch**

1 2 3 4 5 6 7

SCHEMATIC DIAGRAM AS-100A

A
B
C
D
E
F
G
H
I

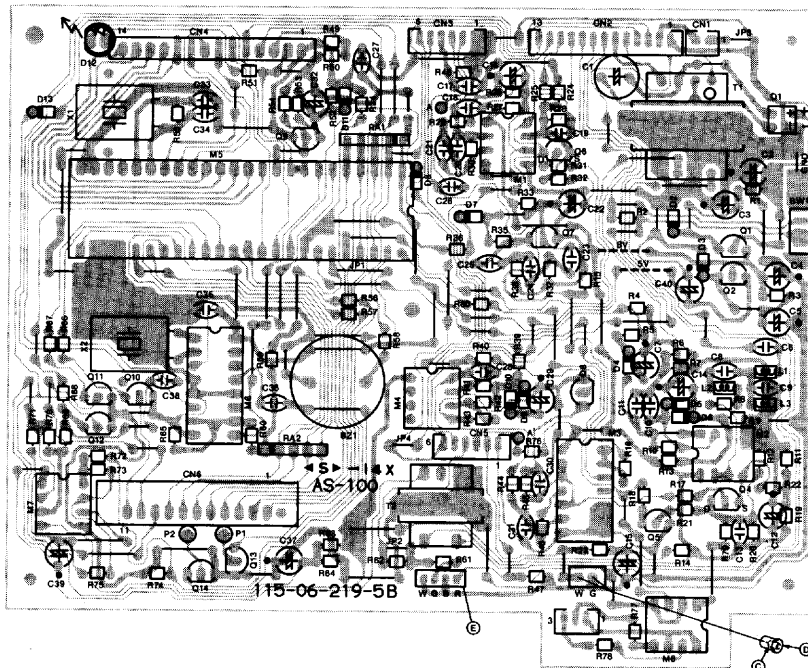




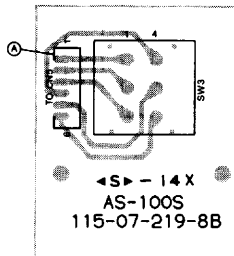
MOUNTING DIAGRAMS AS-100A

● MAIN PCB

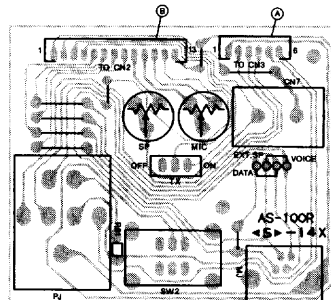
(Viewed from soldered side)



● SW PCB



● REAR PCB



■ Semiconductors

● 2SC1740 (R) 	● 2SK40 (B)
● S1YB10 	● HZ9-B-2 ● HZ6-B-2
● 1SS133 	● SLR-34VW5
● μPC4570C ● PC827 	● TL062CP
● IC14001 	● MC68HC11A8
● TCM3105NL 	

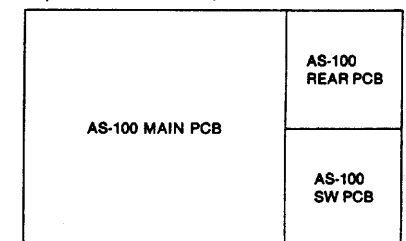
■ Parts List

Designator	Part Code	Description
M1, 4	111-06-362-00	IC, UPC4570C OP-AMP.
M2, 7	111-06-205-00	IC, TL062CP OP-AMP
M3	111-11-009-40	IC, HD14001BP CMOS
M5	111-11-806-70	IC, MC68HC11A8P
M6	111-11-514-70	IC, TCM3105NL CMOS
M8	111-06-308-20	IC, PC827 PHOTOCOPLER
Q1, 2, 5, 8-14	111-02-183-10	TRANSISTOR, 2SC1740(R)
Q4, 6	111-07-009-90	FET, 2SK40(B)
D1	111-03-325-40	DIODE, S1YB10 RECTIFIER
D2	111-03-456-70	DIODE, ZENER, HZ9-B-2
D3	111-03-438-50	DIODE, ZENER, HZ6-B-2
D4-6, 8-11, 13	111-03-628-40	DIODE, 1SS133
D12	111-08-113-40	LED, SLR-34VW5(RED)
C1	113-02-899-50	CAPACITOR 33MF BP 35V
C2	113-32-131-70	CAPACITOR 22MF 35V
C3, 12, 14, 16	113-32-108-50	CAPACITOR 22MF 16V
C4	113-02-635-10	CAPACITOR 100MF 10V
C5, 15, 37, 40	113-32-098-50	CAPACITOR 22MF 10V
C6, 8, 21, 26	113-30-431-20	CAPACITOR 0.047MF 50V
C7	113-32-141-60	CAPACITOR 0.47MF 50V
C9	113-30-433-00	CAPACITOR 0.068MF 50V
C10, 11	113-30-411-00	CAPACITOR 0.022MF 50V
C13, 17, 18, 36, 38	113-30-435-60	CAPACITOR 0.1MF 50V
C19	113-35-079-70	CAPACITOR 100PF CH 50V
C20	113-30-403-50	CAPACITOR .0047MF 50V
C27, 35	113-35-820-90	CAPACITOR 0.1MF 50V
C28	113-23-125-20	CAPACITOR 240PF 3% 100V
C29	113-32-110-40	CAPACITOR 47MF 16V
C30	113-35-544-80	CAPACITOR 150PF CH 50V
C31	113-35-022-50	CAPACITOR 10PF 50V
C32	113-32-106-70	CAPACITOR 10MF 16V
C33, 34	113-35-043-60	CAPACITOR 27PF 50V
C39	113-32-143-40	CAPASITOR 1MF 50V
R40	112-56-731-20	RESISTOR 49.9KOHM 1% 1/5W

Designator	Part Code	Description
R41	112-56-697-30	RESISTOR 100K OHM 1% 1/5W
R44	112-56-667-20	RESISTOR 5.6K OHM 1% 1/5W
R46	112-56-730-10	RESISTOR 30.1KOHM 1% 1/5W
RA1, 2	112-60-034-90	RESISTOR NETWORK RM4 10K
T1	114-04-157-70	MATCHING TRANS. MT-580
T2	114-04-082-8A	MATCHING TRANS. MT-544A
L1, 2	114-19-241-70	COIL, AXIAL, 0.82MH
L3	114-19-239-80	COIL, AXIAL, 0.56MH
SW1	115-12-105-60	SWITCH, SLIDE, SSJ312
SW2	115-12-132-00	SWITCH, SLIDE, SSSP12
SW3	115-29-020-20	SWITCH, HOOK, SPPY
VR1	112-06-249-10	POT., 100 OHM (B); ADJ
VR2	112-06-130-00	POT., 50K OHM (B); ADJ
BZ1	110-06-017-80	BUZZER, PKM1TEPP-4001
MJ	123-03-222-70	JACK, TMSRE2-64
PJ	123-03-248-30	JACK, PHONE, HLJ4306-01
CN1	123-16-767-70	CONNECTOR, IL-S-2P-ST2-EF
CN2	123-26-590-40	CONNECTOR, B13B-PH-K-S
CN3, 5	123-26-177-10	CONNECTOR, B6B-PH
CN4	123-26-461-70	CONNECTOR, HMC5125-01-141
CN6	123-26-407-70	CONNECTOR, 11FDZ-BT
CN7	124-02-364-20	TERMINAL BLOCK, 2P
X1	115-45-376-60	X-TAL, HC-49/U 4.9152MHZ
X2	115-45-462-40	X-TAL, HC49/U 4.433618MHZ
PCB	115-06-219-5B	PC BOARD AS100
(A)	123-19-086-60	CONNECTION CABLE, 6P
(B)	123-19-843-10	CONNECTION CABLE, 13P
(C)	110-02-020-20	MIC ELEMENT, KUC2033
(D)	110-05-187-3A	ACOUSTIC SCREEN
(E)	123-03-160-20	JACK, 616W 4BB-3

■ Arrangement of Composite PC Board

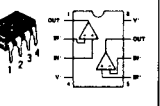
(Part Code: 115-06-219-5B)



EXPLODED VIEW AS-100A

ors

- 2SK40 (B)
- HZ9-B-2
- HZ6-B-2
- SLR-34VW5
- TL062CP
- MC68HC11A8



A

B

C

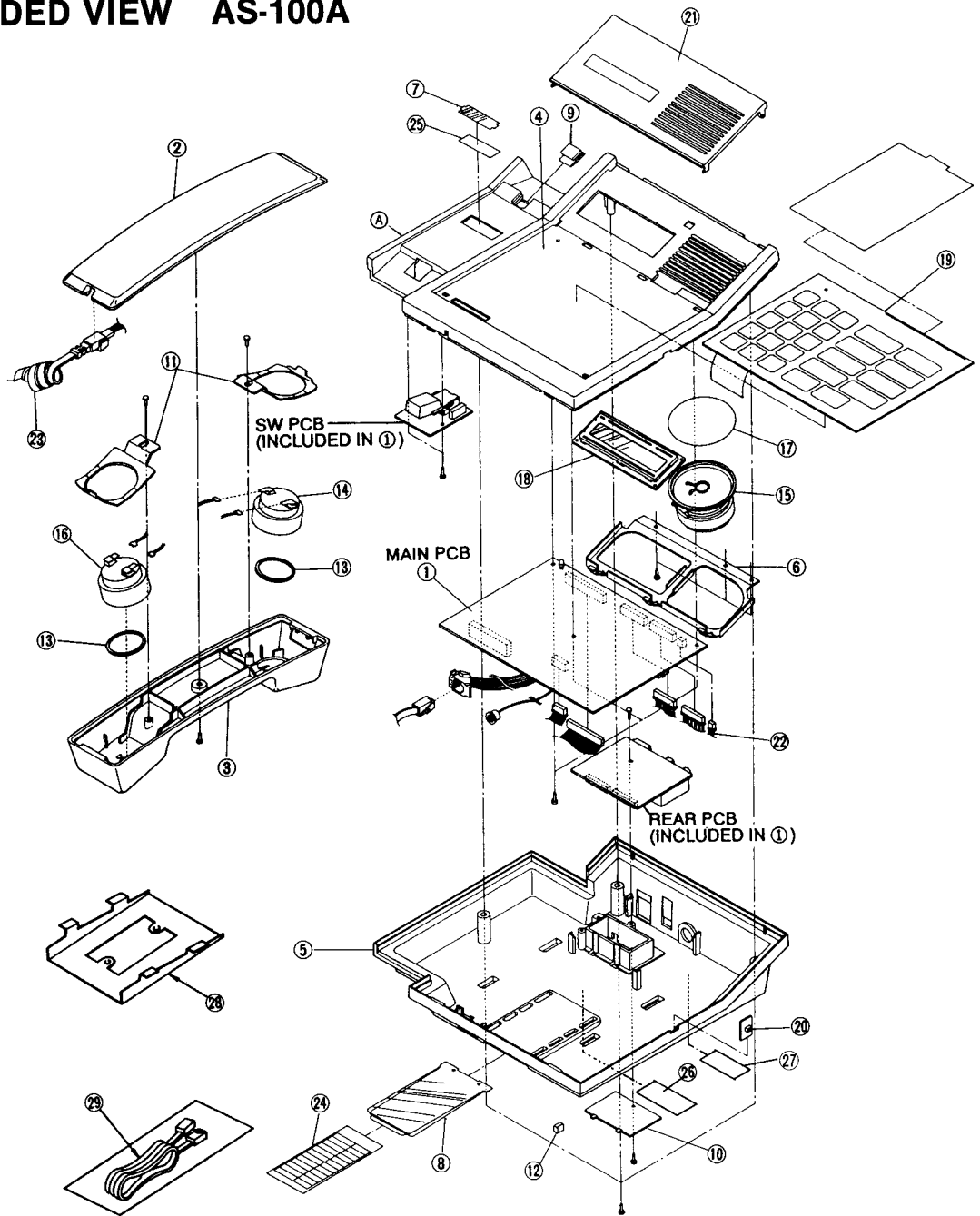
D

E

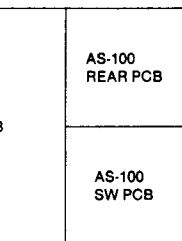
F

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H



Composite PC Board

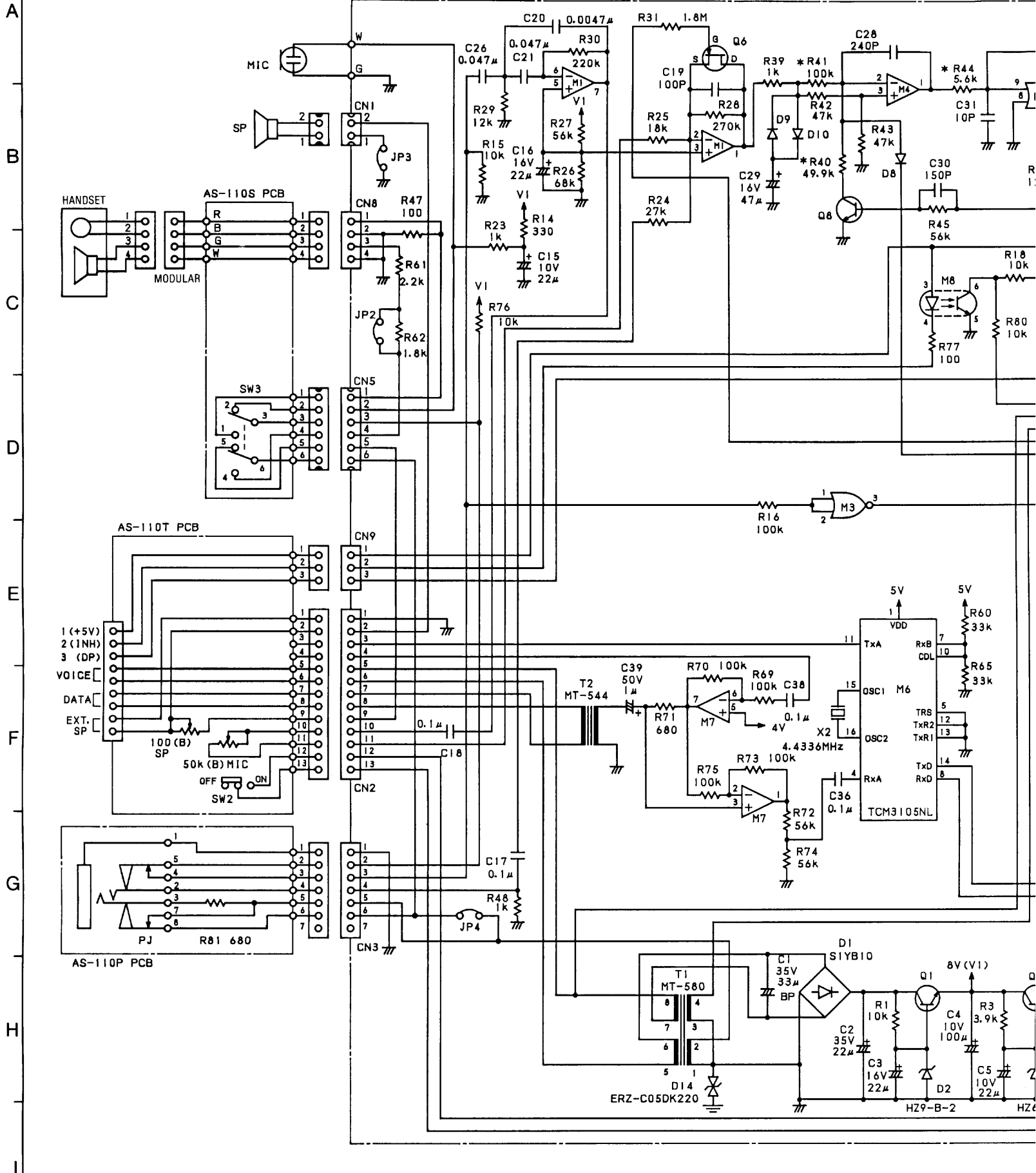


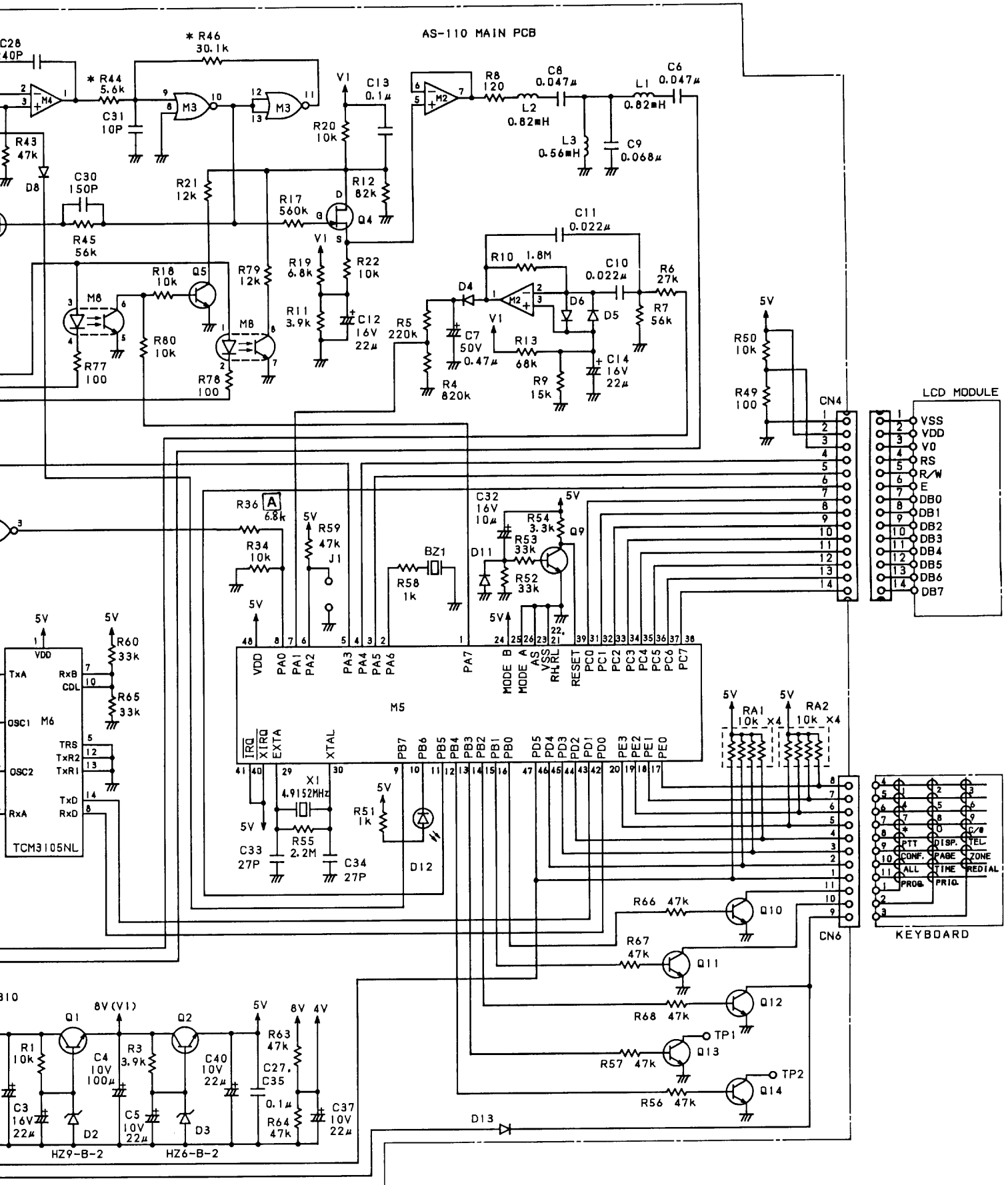
Parts List for AS-100A

Ref. No.	Part Code	Description
1	H7540	PCB ASSY., AS100A
2	101-02-185-60	CASE, HANDSET, TOP
3	101-02-186-70	CASE, HANDSET, BOTTOM
4	101-02-380-50	CASE, UPPER
5	101-02-381-60	CASE, BASE
6	101-06-962-90	CHASSIS, PANEL
7	101-07-740-60	COVER, NUMBER CARD
8	101-07-741-70	COVER, INDEX CARD
9	102-15-191-60	HOOK
10	102-21-688-60	COVER, TERMINAL BLOCK
11	102-22-415-7A	FIXING METAL, DRIVER
12	102-25-017-40	FOOT, RUBBER
13	105-02-384-70	RUBBER CUSHION, DRIVER
14	108-01-050-30	DRIVER, DR923
15	110-01-198-30	SPEAKER UNIT, BST-140
16	110-02-019-80	DRIVER, KDR-0911
17	110-05-186-00	ACUSTIC SCREEN, SPEAKER

Ref. No.	Part Code	Description
18	111-15-025-00	LCD, HLM9793-01-0100
19	115-51-086-7A	KEY-BOARD SWITCH
20	121-01-402-50	KNOB, SPEAKER VOL. SW.
21	121-03-552-50	COVER
22	123-16-765-30	CONNECTOR W/CABLE
23	125-81-014-80	RETRACTILE CORD
24	131-17-316-10	INDEX CARD
25	131-17-317-40	NUMBER CARD
26	131-11-149-50	LABEL, MODEL
27	131-17-367-9A	LABEL, FCC
28	102-22-423-60	BRACKET
29	125-31-753-30	CONNECTION CORD
	131-17-410-00	MARK, UL
	133-06-201-80	INSTRUCTION MANUAL AS-110
	133-06-206-30	INSTRUCTION MANUAL

SCHEMATIC DIAGRAM AS-110





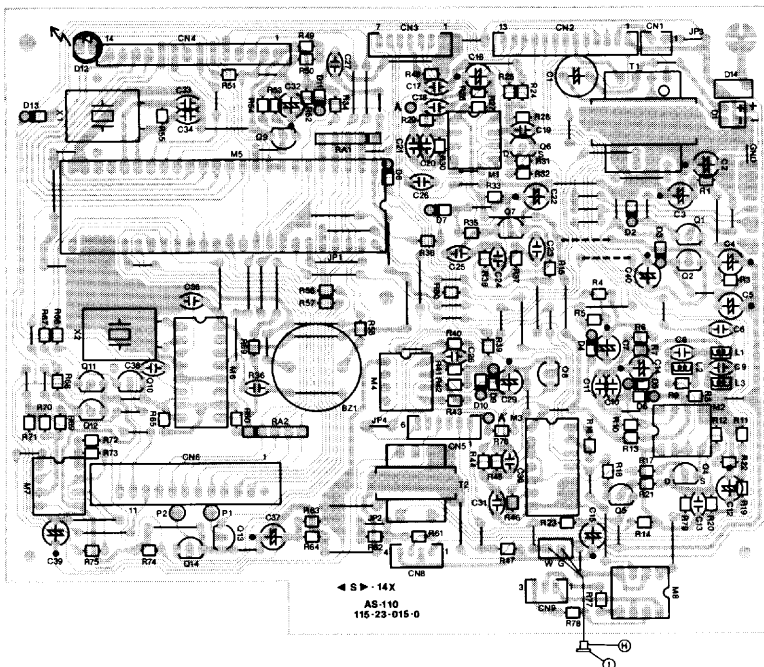
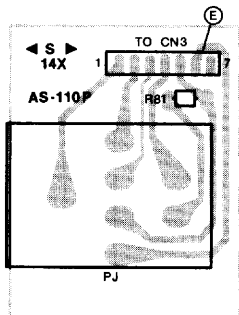
MOUNTING DIAGRAM

AS-110

● MAIN PCB

(Viewed from soldered side)

AS-110P PCB

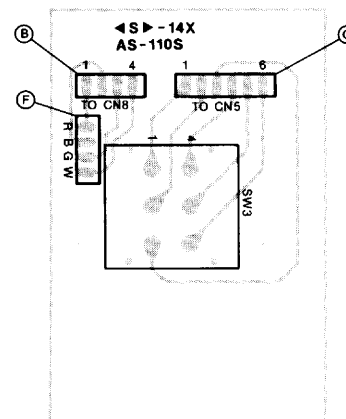


Parts List for AS-110

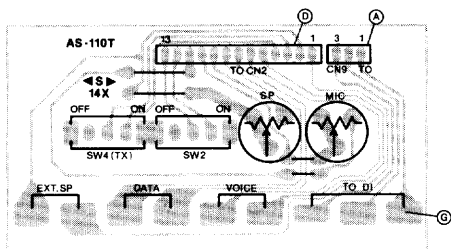
Designator	Part Code	Description
M1, 4	111-06-362-00	IC, UPC4570C OP-AMP.
M2, 7	111-06-205-00	IC, TL062CP OP-AMP
M3	111-11-009-40	IC, HD14001BP CMOS
M5	111-11-806-70	IC, MC68HC11A8P
M6	111-11-514-70	IC, TCM3105NL CMOS
M8	111-06-308-20	IC, PC827 PHOTOCOUPLER
Q1, 2, 5, 8-14	111-02-183-10	TRANSISTOR, 2SC1740(R)
Q4, 6	111-07-009-90	PET, 2SK40(B)
D1	111-03-325-40	DIODE, S1YB10 RECTIFIER
D2	111-03-456-70	DIODE, ZENER, HZ9-B-2
D3	111-03-438-50	DIODE, ZENER, HZ6-B-2
D4-6, 8-11, 13	111-03-628-40	DIODE, 1SS133
D14	111-04-069-40	ABSORBER, ERZ-C05DK220
D12	111-08-113-40	LED, SLR-34VW5(RED)
C1	113-02-899-50	CAPACITOR 33MF BP 35V
C2	113-32-131-70	CAPACITOR 22MF 35V
C3, 12, 14, 16	113-32-108-50	CAPACITOR 22MF 16V
C4	113-02-635-10	CAPACITOR 100MF 10V
C5, 15, 37, 40	113-32-098-50	CAPACITOR 22MF 10V
C6, 8, 21, 26	113-30-431-20	CAPACITOR 0.047MF 50V
C7	113-32-141-60	CAPACITOR 0.47MF 50V
C9	113-30-433-00	CAPACITOR 0.068MF 50V
C10, 11	113-30-411-00	CAPACITOR 0.022MF 50V
C13, 17, 18, 36, 38	113-30-435-60	CAPACITOR 0.1MF 50V
C19	113-35-079-70	CAPACITOR 100PF CH 50V
C20	113-30-403-50	CAPACITOR 0047MF 50V
C27, 35	113-35-820-90	CAPACITOR 0.1MF 50V
C28	113-23-125-20	CAPACITOR 240PF 3% 100V
C29	113-32-110-40	CAPACITOR 47MF 16V
C30	113-35-544-80	CAPACITOR 150PF CH 50V
C31	113-35-022-50	CAPACITOR 10PF 50V
C32	113-32-106-70	CAPACITOR 10MF 16V
C33, 34	113-35-043-60	CAPACITOR 27PF 50V
C39	113-32-143-40	CAPASITOR 1MF 50V

Designator	Part Code	Description
R40	112-56-731-20	RESISTOR 49.9KOHM 1% 1/5W
R41	112-56-697-30	RESISTOR 100K OHM 1% 1/5W
R44	112-56-667-20	RESISTOR 5.6K OHM 1% 1/5W
R46	112-56-730-10	RESISTOR 30.1KOHM 1% 1/5W
RA1, 2	112-60-034-90	RESISTOR NETWORK RM4 10K
T1	114-04-157-70	MATCHING TRANS. MT-580
T2	114-04-082-8A	MATCHING TRANS. MT-544A
L3	114-19-239-80	COIL, AXIAL, 0.56MH
L1, 2	114-19-241-70	COIL, AXIAL, 0.82MH
SW2	115-12-125-40	SWITCH, SLIDE, SSTP12P-06V
SW3	115-29-020-20	SWITCH, HOOK, SPPY
PJ	123-03-248-30	JACK, PHONE, HLJ4306-01
RZ1	110-06-017-80	BUZZER, PKM17EP-4001
VR1	112-06-249-10	POT., 100 OHM (B); ADJ
VR2	112-06-130-00	POT., 50K OHM (B); ADJ
CN1	123-16-767-70	CONNECTOR, 1L-S-2P-ST2-EF
CN2	123-26-590-40	CONNECTOR, B13B-PH-K-S
CN3	123-26-178-60	CONNECTOR, B7B-PH
CN4	123-26-461-70	CONNECTOR, HMC5125-01-141
CN5	123-26-177-10	CONNECTOR, B6B-PH
CN6	123-26-407-70	CONNECTOR, 11FDZ-BT
CN8	123-26-176-80	CONNECTOR, B4B-PH
CN9	123-26-166-30	CONNECTOR, B3B-PH
X1	115-45-376-60	X-TAL, HC-49/U 4.9152MHZ
X2	115-45-462-40	X-TAL, HC49/U 4.433618MHZ
PCB	115-23-015-00	PC BOARD, MAIN
A	123-19-840-20	CONNECTION CABLE, 3P
B	123-19-841-30	CONNECTION CABLE, 4P
C	123-19-842-60	CONNECTION CABLE, 6P
D	123-19-843-10	CONNECTION CABLE, 13P
E	123-19-850-30	CONNECTION CABLE, 7P
F	123-03-261-40	JACK, TM1R-61GM44-04
G	124-02-503-90	TERMINAL BLOCK, F2060A
H	110-02-020-20	MIC ELEMENT, KUC2033
I	110-05-187-3A	ACOUSTIC SCREEN

AS-110S PCB



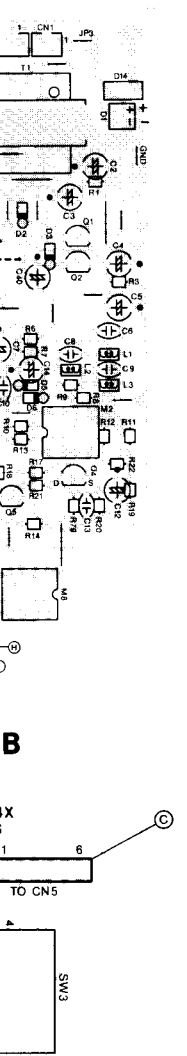
AS-110T PCB



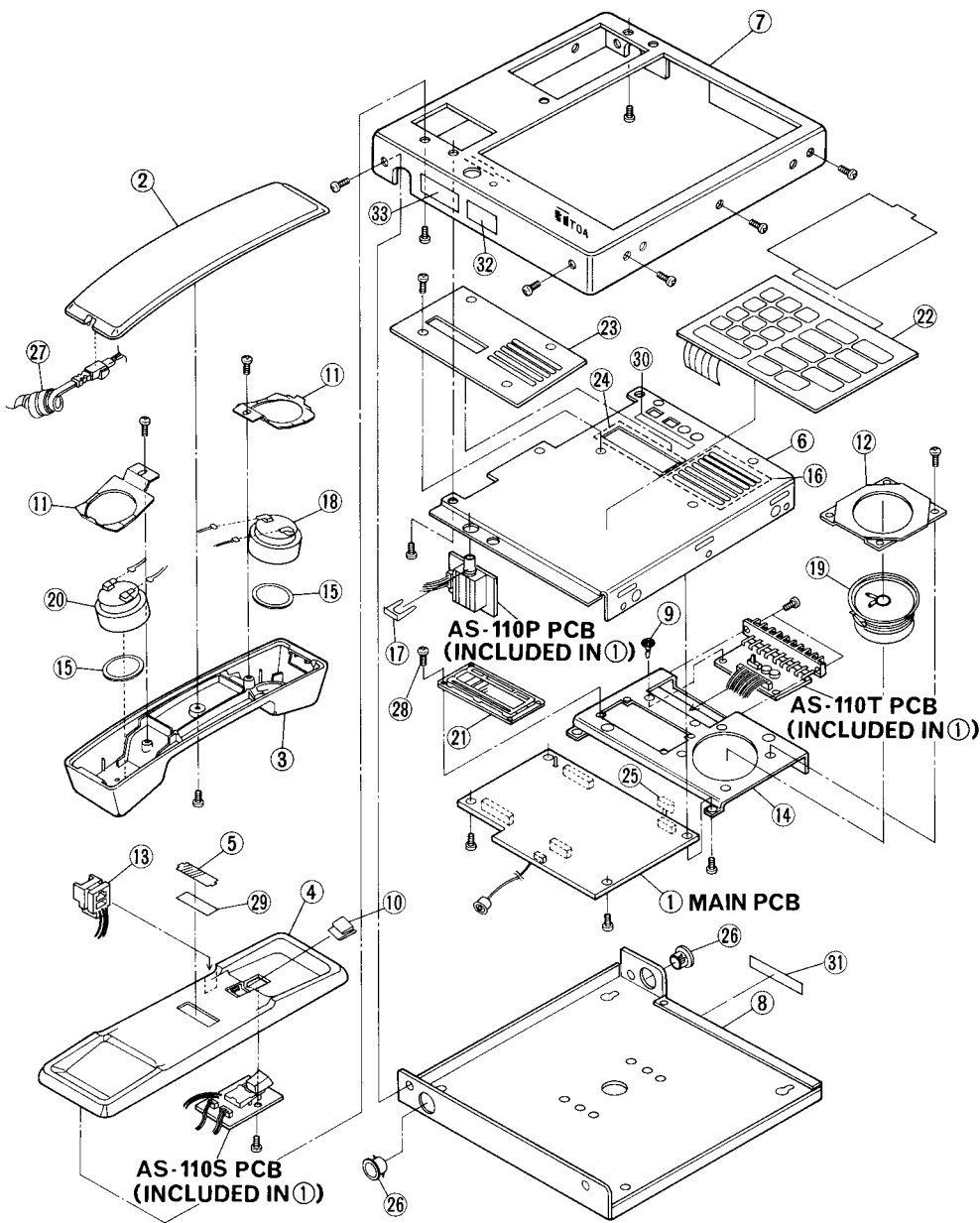
Semiconductors

<ul style="list-style-type: none"> ● 2SC1740 (R) 	<ul style="list-style-type: none"> ● 2SK40 (B) 	<ul style="list-style-type: none"> ● S1YB10 	<ul style="list-style-type: none"> ● HZ9-B-2 ● HZ6-B-2 	<ul style="list-style-type: none"> ● 1SS133
<ul style="list-style-type: none"> ● μPC4570C ● PC827 	<ul style="list-style-type: none"> ● TL062CP 	<ul style="list-style-type: none"> ● IC14001 	<ul style="list-style-type: none"> ● MC68HC11A8 	

EXPLODED VIEW AS-110



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Parts List for AS-110

Ref. No.	Part Code	Description
1	H7480	PCB ASSY., AS-110
2	101-02-185-60	CASE, HANDSET, TOP
3	101-02-186-70	CASE, HANDSET, BOTTOM
4	101-02-457-40	HOLDER, HANDSET
5	101-07-740-60	COVER, NUMBER CARD
6	101-16-078-40	CHASSIS, PANEL
7	101-21-054-80	CASE, UPPER
8	101-21-055-70	COVER
9	102-02-157-60	SPACER FOR PC BOARDS
10	102-15-191-60	HOOK
11	102-22-415-7A	FIXING METAL, DRIVER
12	102-22-503-5A	BRACKET, SPEAKER
13	123-03-261-40	MODULER JACK, TM1R-616M44-04
14	102-31-083-40	BRACKET, LCD
15	105-02-384-70	RUBBER CUSHION, DRIVER
16	105-04-182-30	DUST SCREEN
17	106-51-183-70	CLIP, JACK; HLJ0999
18	108-01-050-30	DRIVER, DR923
19	110-01-198-30	SPEAKER UNIT, BST-140

Ref. No.	Part Code	Description
20	110-02-019-80	DRIVER, KDR-0911
21	111-15-025-00	LCD, HLM9793-01-0100
22	121-03-636-60	COVER, LCD
23	115-51-086-7A	KEY-BOARD SWITCH
24	121-03-635-50	PANEL, LCD
25	105-05-112-5A	SPACER, HO. 2 35*80
26	123-16-765-30	CONNECTOR W/ CABLE 2P
27	125-51-069-30	BUSHING
28	125-81-014-80	RETRACTILE CORD
29	106-54-031-00	REVELT, NYLON: NRS-580
30	131-17-317-40	NUMBER CARD
31	131-27-269-30	PLATE, SWITCH
32	131-27-270-70	PLATE, TERMINAL BLOCK
33	131-17-367-9A	LABEL, FCC
	131-14-102-90	LABEL, NAME
	121-03-637-90	COVER, TERMINAL BLOCK
	125-53-044-20	SNAP BAND SG-130
	102-31-081-60	BRACKET
	133-06-201-80	INSTRUCTION MANUAL AS-110

2. DIRECT SELECT INTERFACE UNITS DI-100, DI-110

■ General Description

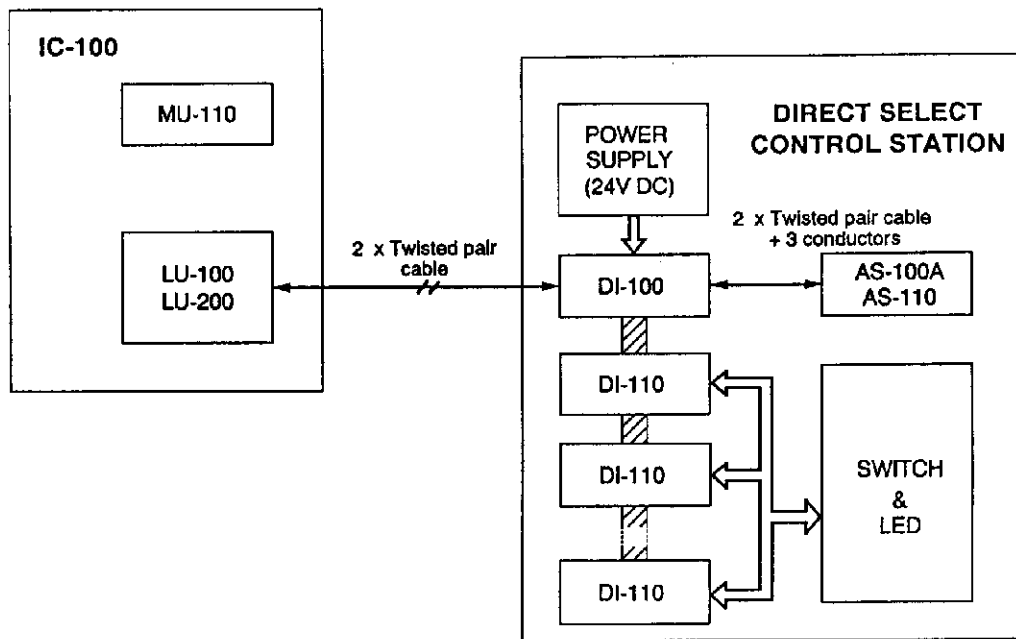
The DI-100 and DI-110 interface boards are designed to be used in conjunction with the IC-100 Institutional Communication System and AS-100A/AS-110 Control Stations. This will allow a control station operator to make or receive calls from other stations with the push of (1) switch on custom or off-the-shelf control panels. Calls to or from corresponding sub-stations can be announced by flashing LED's on the control panel or numerically in the associated AS-100A or AS-110.

■ SPECIFICATIONS

Master stations	Used with DI-100/DI-110 : AS-100A/AS-110
Maximum number of interface cards	DI-100 : 8 per CK-100 exchange; 72 per system (9 tie-lined exchanges) DI-110 : 4 per CK-100 exchange; 36 per system (9 tie-lined exchanges)
Maximum number of ports per DI-110	30
Maximum number of ports per system	1080
Maximum distance, exchange to DI-100/ DI-110 and to AS-100A/AS-110	3000 ft. (1 km) 22 AWG
DI-100 inputs	(a) Dry contact : 1 for PTT switch 1 for indication reset switch (b) Control lines : 1 for exchange (LU card) 1 for station connection (AS-100A/AS-110) (c) Power supply : 24V DC
DI-100 outputs	(a) Open collector : 2 for corridor lamp control (24V DC, approx. 10mA). 1 for buzzer control (24V DC, approx. 50mA).
DI-110 inputs	(a) Dry contact : 30 for calling and response switch connection 1 for inhibit switch 1 for indication test switch (b) Power supply : 24V DC
DI-110 outputs	(a) Open collector : 30 for LED indication of calling, response to call, priority level. (24V DC, approx. 10mA) (b) Open collector : 30 for LED indication of busy ports. (24V DC, approx. 10mA) (c) N/O relay contact : 30 for general purpose control rating : 30V DC, 10mA (resistive load)
Power requirement	(a) Voltage : 24V DC (± 4 volts) (b) Current : DI-100 (500mA) DI-110 (300mA)
Custom or off-the-shelf control panel switch rating	(a) Operating voltage : 5V DC (b) Operating current : 1mA (c) Contact resistance : less than 50 Ω
Functions	(a) Calling/priority level indication : Determined by LED flash rate. (b) Call make/response : Steady LED (c) Busy indication : Steady LED (d) Selected station's signal output (selected station, response, PTT and termination signal) : 140pps dial pulse (programming station number/select switch relationship) (e) Exchange/station interface function
Terminations	(a) Screwless terminal : DI-100 to switches, power supply, AS-100A/ AS-110 DI-110 to power supply (b) Ribbon cable connector : DI-100 to DI-110, DI-110 to DI-110 (c) "CHAMP®" IDC connector : DI-110 to switches, LED's, control outputs

* Specifications are subject to change without notice.

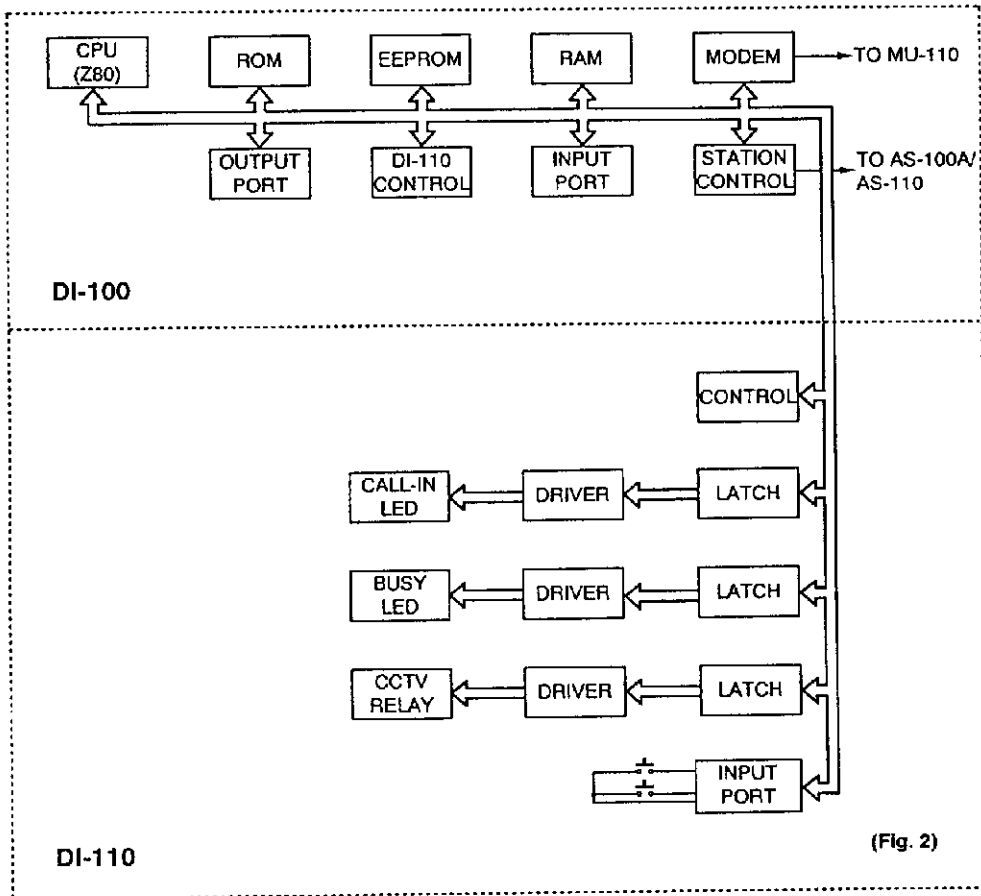
SYSTEM CONFIGURATION



PRINCIPLE OF OPERATION AND BLOCK DIAGRAM

The DI-100 outputs dial pulse to the AS-100A/AS-110 according to control data transmitting from the MU-110. The DI-100 also transmits a flashing or steady LED signal, relay control signal, etc. to the DI-110, and can periodically scans the control panel switches.

Block Diagram

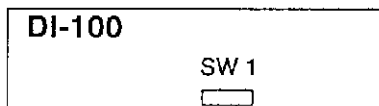


(Fig. 2)

■ INSTALLATION

DI-100's Address Setting

Set SW1 corresponding to the LU card number connected to the DI-100, referring to Fig. 3 and Table 1.



LU Card No.	SW 1	LU Card No.	SW 1
1	OFF 1 2 3 4	5	OFF 1 2 3 4
2	OFF 1 2 3 4	6	OFF 1 2 3 4
3	OFF 1 2 3 4	7	OFF 1 2 3 4
4	OFF 1 2 3 4	8	OFF 1 2 3 4

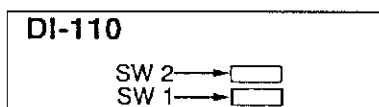
(SW1 is factory-preset to the LU card's No.1.)

(Table 1)

DI-110's Address Setting and Card Connection

(1) DI-110's Address Setting

Set SW1 and SW2 corresponding to the DI-110 card number, referring to Fig. 4 and Table 2.



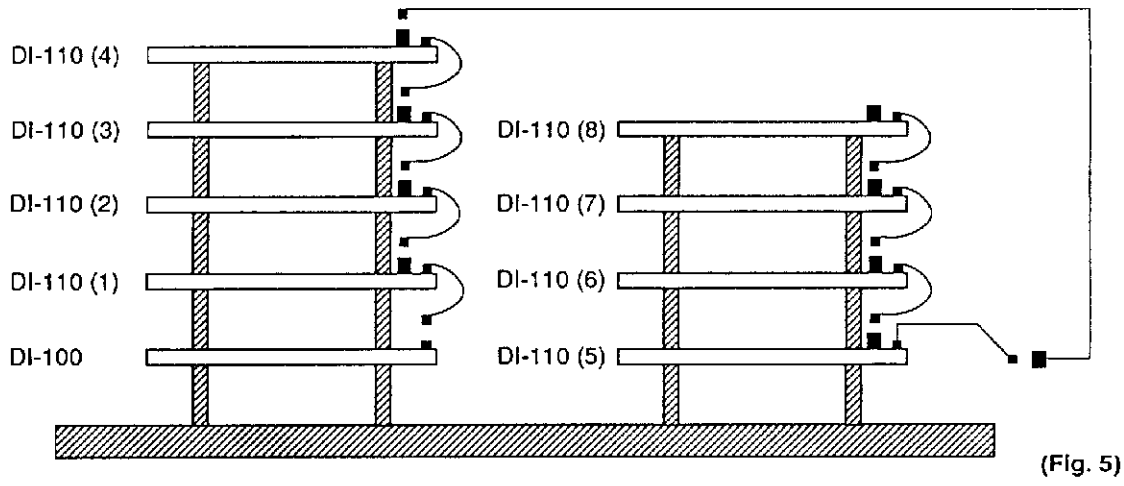
DI-110 No.	SW 1	SW 2	DI-110 No.	SW 1	SW 2	DI-110 No.	SW 1	SW 2
1			13			25		
2			14			26		
3			15			27		
4			16			28		
5			17			29		
6			18			30		
7			19			31		
8			20			32		
9			21			33		
10			22			34		
11			23			35		
12			24			36		

(SW1 and SW2 are factory-preset to the DI-110 No.1.)

(Table 2)

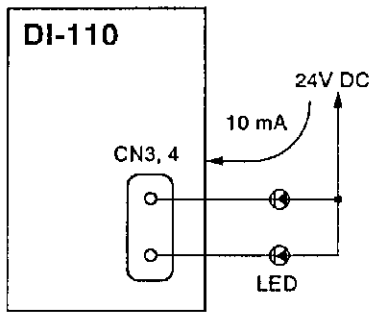
DI-100/DI-110 Card Rack Installation

Install the DI-100/DI-110's inside the control panel shown in Fig. 5 with stand-offs or use the CK-100 and install at the equipment rack. Connect the cards with the ribbon cables as shown below.



Wiring the LED's

Wire the CALL-IN and BUSY LED's as shown in Fig. 6 and Tables 3 and 4.



CALL-IN LED No.	CONNECTOR PIN No.	CALL-IN LED No.	CONNECTOR PIN No.	CALL-IN LED No.	CONNECTOR PIN No.
1	CN3-1	11	CN3-11	21	CN3-21
2	CN3-2	12	CN3-12	22	CN3-22
3	CN3-3	13	CN3-13	23	CN3-23
4	CN3-4	14	CN3-14	24	CN3-24
5	CN3-5	15	CN3-15	25	CN3-25
6	CN3-6	16	CN3-16	26	CN3-26
7	CN3-7	17	CN3-17	27	CN3-27
8	CN3-8	18	CN3-18	28	CN3-28
9	CN3-9	19	CN3-19	29	CN3-29
10	CN3-10	20	CN3-20	30	CN3-30

(Table 3)

BUSY LED No.	CONNECTOR PIN No.	BUSY LED No.	CONNECTOR PIN No.	BUSY LED No.	CONNECTOR PIN No.
1	CN3-33	11	CN3-43	21	CN4-3
2	CN3-34	12	CN3-44	22	CN4-4
3	CN3-35	13	CN3-45	23	CN4-5
4	CN3-36	14	CN3-46	24	CN4-6
5	CN3-37	15	CN3-47	25	CN4-7
6	CN3-38	16	CN3-48	26	CN4-8
7	CN3-39	17	CN3-49	27	CN4-9
8	CN3-40	18	CN3-50	28	CN4-10
9	CN3-41	19	CN4-1	29	CN4-11
10	CN3-42	20	CN4-2	30	CN4-12

(Table 4)

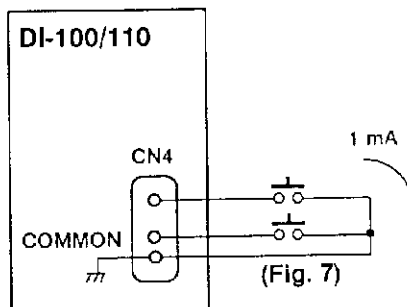
Control Panel Switch Wiring

Wire switches (PTT, indication reset to the DI-100 and direct call, response, etc. to the DI-110) as shown in Fig. 7 and Tables 5 and 6.

Use an alternate (locked) type switch for the INHIBIT switch.

SW NAME	CONNECTOR PIN No.
PTT	CN4-4
INDICATION RESET	CN4-5
COMMON	CN4-6

(Table 5)

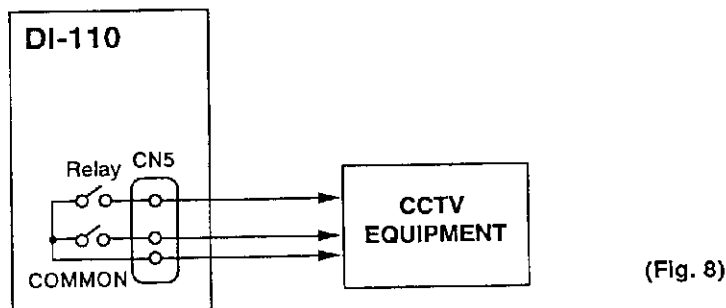


SELECT SW No.	CONNECTOR PIN No.	SELECT SW No.	CONNECTOR PIN No.	SELECT SW No.	CONNECTOR PIN No.
1	CN4-15	11	CN4-25	21	CN4-35
2	CN4-16	12	CN4-26	22	CN4-36
3	CN4-17	13	CN4-27	23	CN4-37
4	CN4-18	14	CN4-28	24	CN4-38
5	CN4-19	15	CN4-29	25	CN4-39
6	CN4-20	16	CN4-30	26	CN4-40
7	CN4-21	17	CN4-31	27	CN4-41
8	CN4-22	18	CN4-32	28	CN4-42
9	CN4-23	19	CN4-33	29	CN4-43
10	CN4-24	20	CN4-34	30	CN4-44
INHIBIT	CN4-45				
INDICATION TEST	CN4-46				
COMMON	CN4-47~50				

(Table 6)

Wiring of Relay Outputs

Wire relay outputs to the DI-110 as shown in Fig. 8 and Table 7.



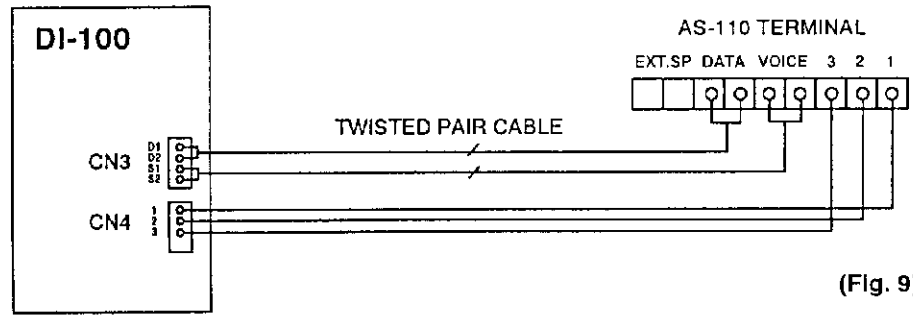
(Fig. 8)

CONTROL OUTPUT No.	CONNECTOR PIN No.	CONTROL OUTPUT No.	CONNECTOR PIN No.	CONTROL OUTPUT No.	CONNECTOR PIN No.
1	CN5-1	11	CN5-11	21	CN5-21
2	CN5-2	12	CN5-12	22	CN5-22
3	CN5-3	13	CN5-13	23	CN5-23
4	CN5-4	14	CN5-14	24	CN5-24
5	CN5-5	15	CN5-15	25	CN5-25
6	CN5-6	16	CN5-16	26	CN5-26
7	CN5-7	17	CN5-17	27	CN5-27
8	CN5-8	18	CN5-18	28	CN5-28
9	CN5-9	19	CN5-19	29	CN5-29
10	CN5-10	20	CN5-20	30	CN5-30
COMMON	CN5-31~50				

(Table 7)

Wiring to the AS-110

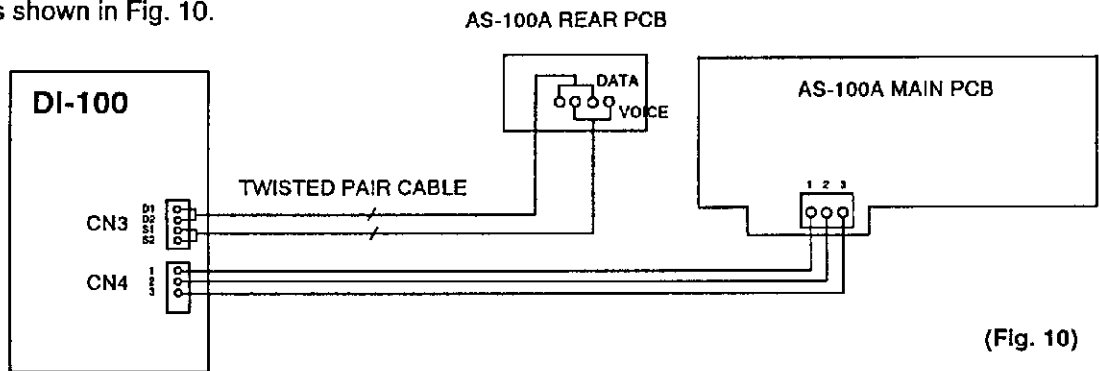
Wire as shown in Fig. 9.



(Fig. 9)

Wiring to the AS-100A

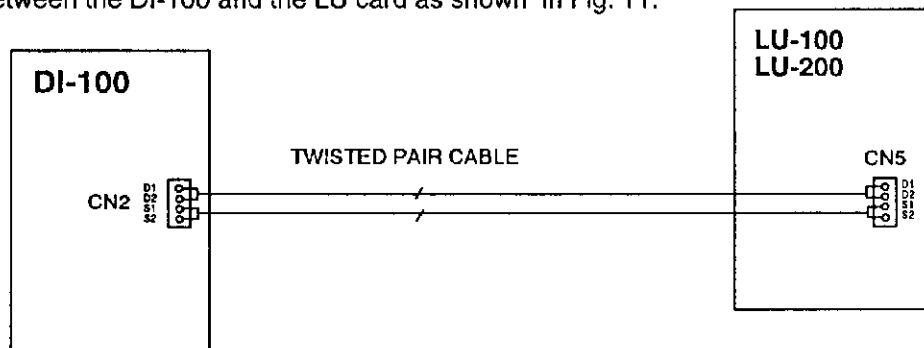
Wire as shown in Fig. 10.



(Fig. 10)

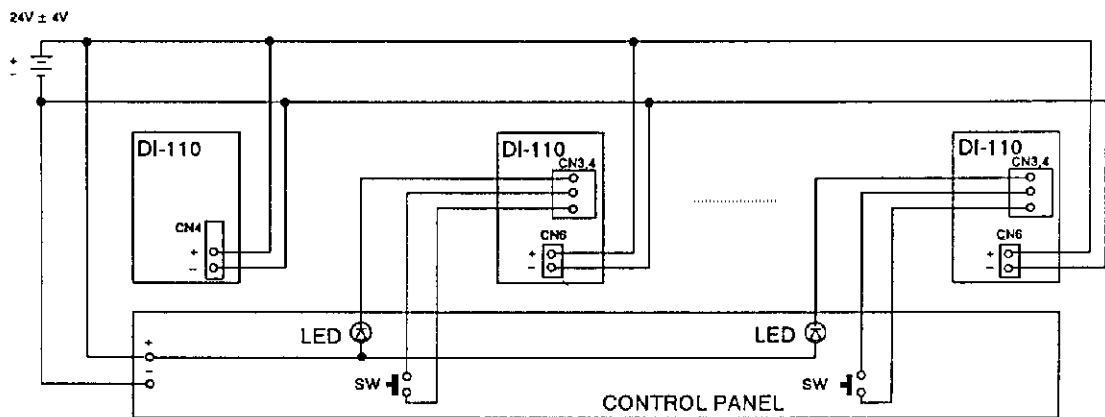
Wiring to the LU Cards

Wire between the DI-100 and the LU card as shown in Fig. 11.



(Fig. 11)

Power Supply Connection



(Fig. 12)

CONNECTOR PIN No.
4-35
4-36
4-37
4-38
4-39
4-40
4-41
4-42
4-43
4-44

Table 6)

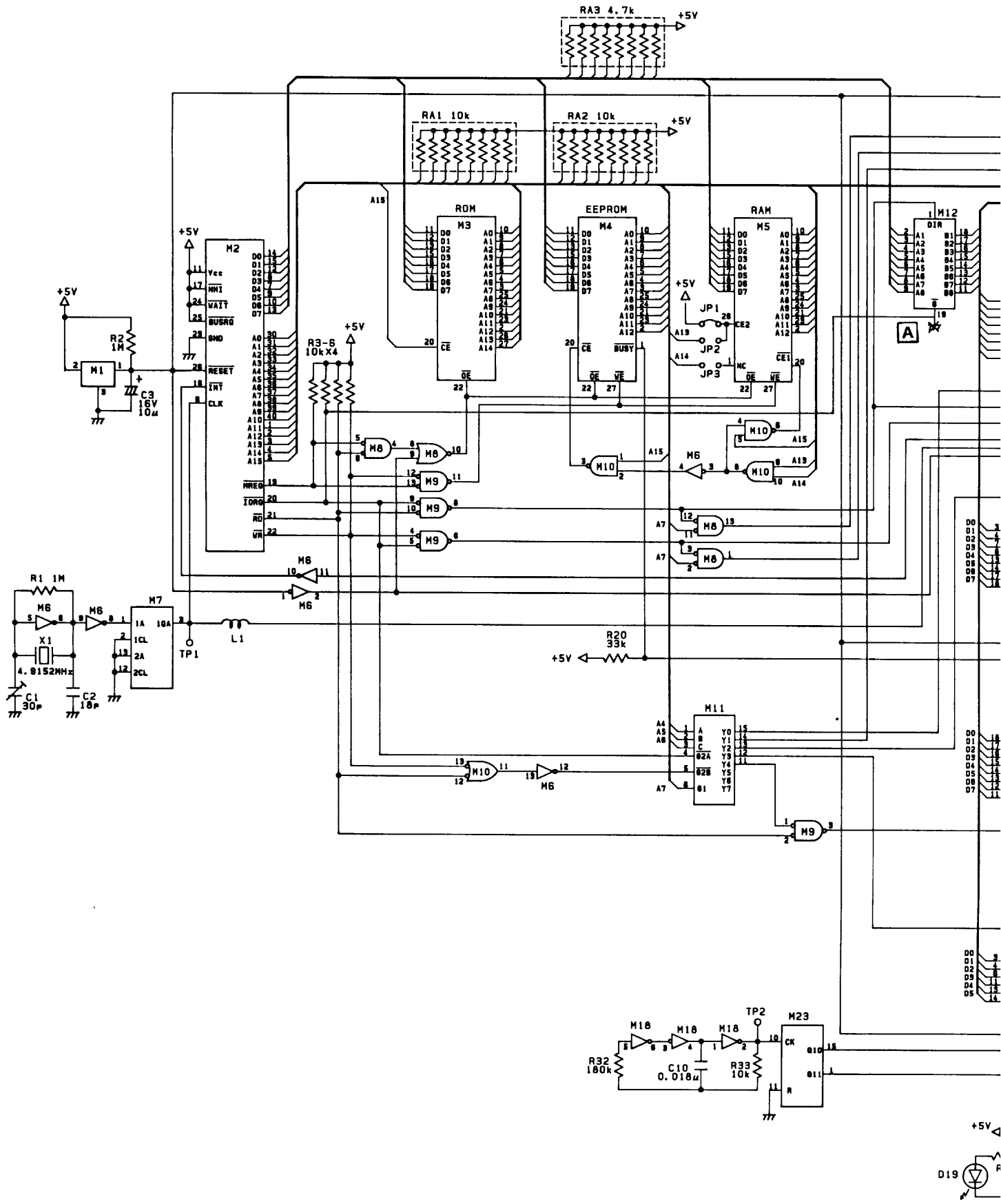
CONNECTOR PIN No.
15-21
15-22
15-23
15-24
15-25
15-26
15-27
15-28
15-29
15-30

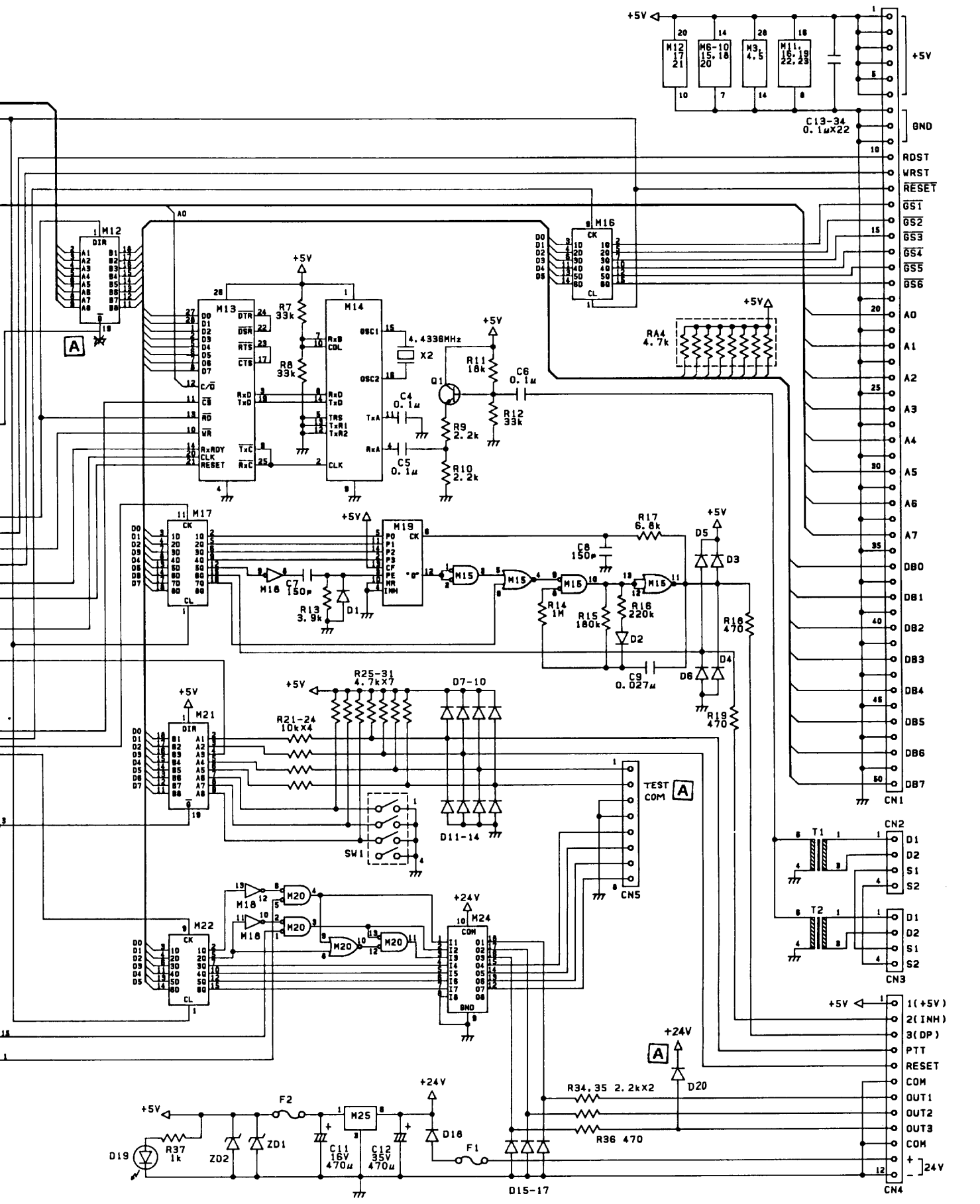
Table 7)

1 2 3 4 5 6 7

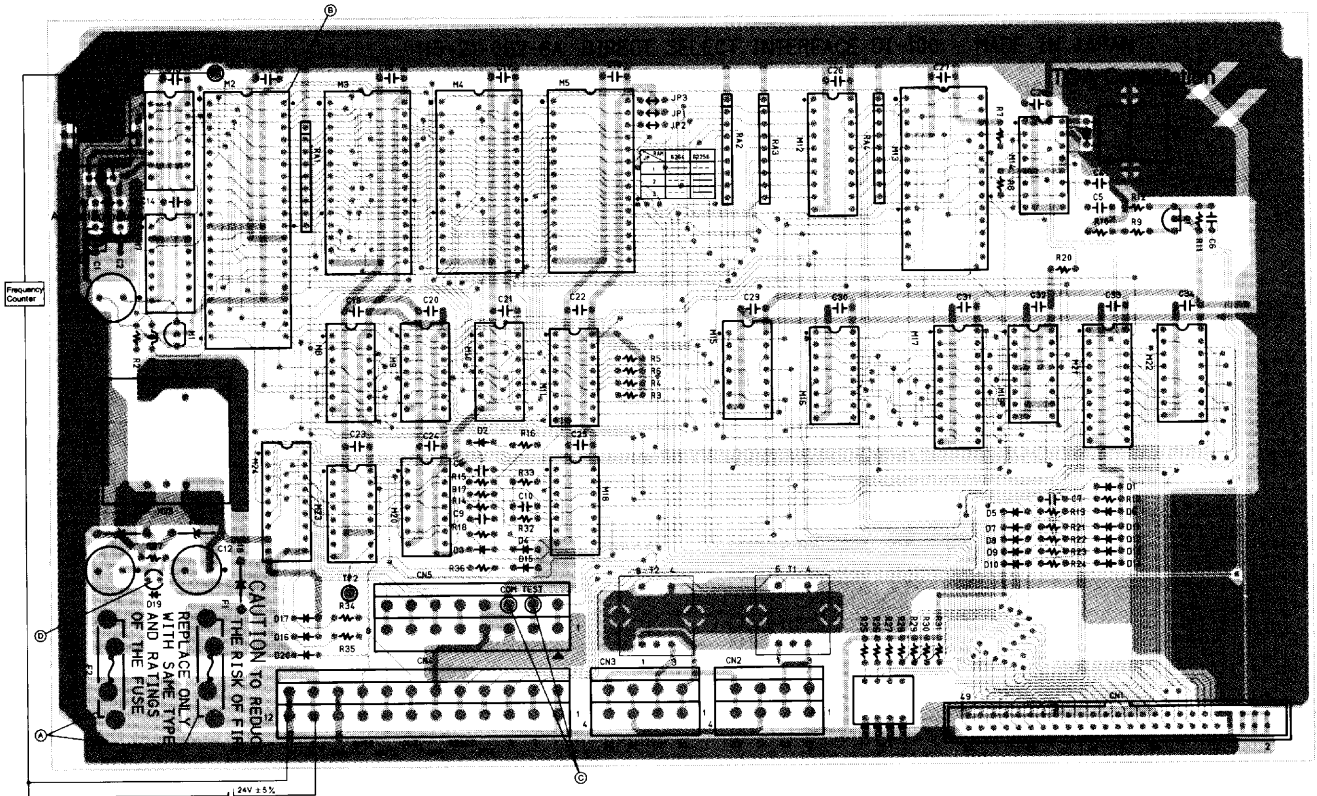
SCHEMATIC DIAGRAM DI-100

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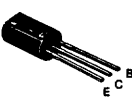
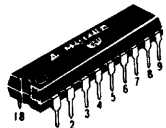

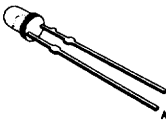
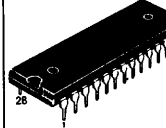
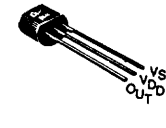

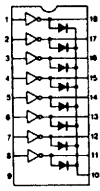
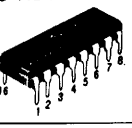
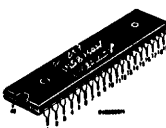
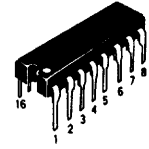
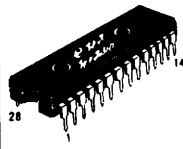

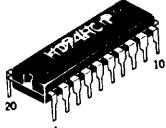
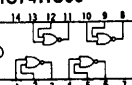


■ MOUNTING DIAGRAM DI-100



Adjust the Trimmer capacitor C1 so that the frequency at TP1 is 2.4576 ± 0.0004 MHz.

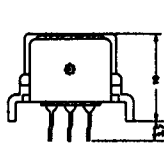
■ Semiconductors

<ul style="list-style-type: none"> ● 2SC1740 (R) 	<ul style="list-style-type: none"> ● TD62083AP 	<ul style="list-style-type: none"> ● 1Z6.8 (K) ● 1SS133 ● 1SR35-200A 	<ul style="list-style-type: none"> ● SLR-54VW3F 	<ul style="list-style-type: none"> ● HN58C65P25 	<ul style="list-style-type: none"> ● S-8054ALB 
<ul style="list-style-type: none"> ● HD74HC02P ● TC74HCU04P ● HD74HC00 ● HD74HC32 		<ul style="list-style-type: none"> ● TC4526BP ● HD74HC174P ● HD74HC393P ● 74HC138P ● HD14001BP ● HD14040BP 	<ul style="list-style-type: none"> ● LH0080 	<ul style="list-style-type: none"> ● TCM3105NL 	<ul style="list-style-type: none"> ● HM6264LP-15 ● M5M82C51AP 
<ul style="list-style-type: none"> ● TC74HC04P 	<ul style="list-style-type: none"> ● HD74HC273P ● HD74HC245P 				
<ul style="list-style-type: none"> ● IC74HC00 					

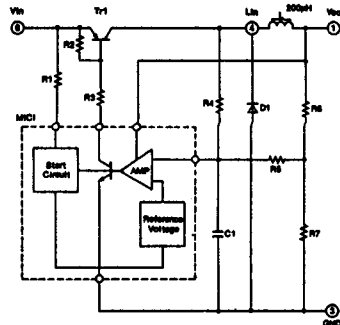
■ Parts List for DI-100

Designator	Part Code	Description
M1	111-06-521-90	IC, S-8054ALB
M2	111-11-217-50	IC, LH0080B NMOS
M3	211-11-867-9A	IC, HN27C256 V1.10
M4	111-11-513-00	IC, HN58C65P25 CMOS
M5	111-11-219-70	IC, HM6264LP-15 CMOS RAM
M6	111-11-329-50	IC, TC74HC04P CMOS
M7	111-11-401-20	IC, HD74HC393P CMOS
M8	111-11-330-10	IC, HD74HC02P CMOS
M9	111-11-321-50	IC, HD74HC32P CMOS
M10	111-11-297-10	IC, HD74HC00P CMOS
M11	111-11-291-30	IC, HD74HC138P CMOS
M12, 21	111-11-294-80	IC, HD74HC245P CMOS
M13	111-11-693-50	IC, M5M82C51AP CMOS
M14	111-11-514-70	IC, TCM3105NL CMOS
M15, 20	111-11-009-40	IC, HD14001BP CMOS
M16, 22	111-11-317-80	IC, HD74HC174P CMOS
M17	111-11-319-00	IC, HD74HC273P CMOS
M18	111-11-296-80	IC, HD74HC04P CMOS
M19	111-11-215-10	IC, TC4526BP CMOS
M23	111-11-023-00	IC, HD14040BP CMOS
M24	111-06-382-20	IC, TD62083AP
M25	111-06-447-60	IC, SI-8301LG REGULATOR
Q1	111-02-183-10	TRANSISTOR, 2SC1740(R)
D1-17, 2	111-03-628-40	DIODE, 1SS133
D18	111-03-592-60	DIODE, 1SR35-200A
D19	111-08-113-40	LED, SLR-34VW5(RED)
ZD1, 2	111-03-926-50	DIODE, ZENER, 126.8
C1	113-21-026-60	CAPACITOR 30PF 100V
C2	113-35-031-90	CAPACITOR 18PF 50V
C3	113-02-931-60	CAPACITOR 10MF 16V
C4-6	113-30-435-60	CAPACITOR 0.1MF 50V
C7, 8	113-35-085-80	CAPACITOR 150PF SL 50V
C9	113-30-428-80	CAPACITOR 0.027MF 50V
C10	113-30-410-90	CAPACITOR 0.018MF 50V
C11	113-02-649-60	CAPACITOR 470MF 16V
C12	113-02-671-50	CAPACITOR 470MF 35V
C13-34	113-35-820-90	CAPACITOR 0.1MF 50V
RA1, 2	112-60-234-90	RESISTOR NETWORK RM8 10K
RA3, 4	112-60-230-30	RESISTOR NETWORK RM8 4.7K
T1, 2	114-04-082-8A	MATCHING TRANS. MT-544A
F1	115-40-235-9A	TUBE FUSE 1A
L1	115-44-038-40	FILTER, BL02RN2-R62
SW1	115-51-072-80	SWITCH, DIP, KSPA04
CN1	123-26-406-40	CONNECTOR, XG4C-5031
CN2, 3	123-26-153-30	TERMINAL BLOCK, 4P
CN4	123-26-701-60	TERMINAL BLOCK
X1	115-45-376-60	X-TAL, HC-49/U 4.9152MHZ
X2	115-45-462-40	X-TAL, HC49/U 4.433618MHZ
PCB	115-21-062-6A	PC BOARD DI100
	H7550	PCB ASSY., DI100
A	123-07-041-0A	FUSE HOLDER, S-N5057
B	123-05-195-40	SOCKET, IC, AXS112813
C	124-07-020-80	CHECK PIN
D	105-05-051-50	SPACER, LED
	131-07-849-90	LABEL, ATTENTION
	131-17-367-9A	LABEL, FCC
	133-06-203-60	INSTRUCTION MANUAL

● SI-8301LG



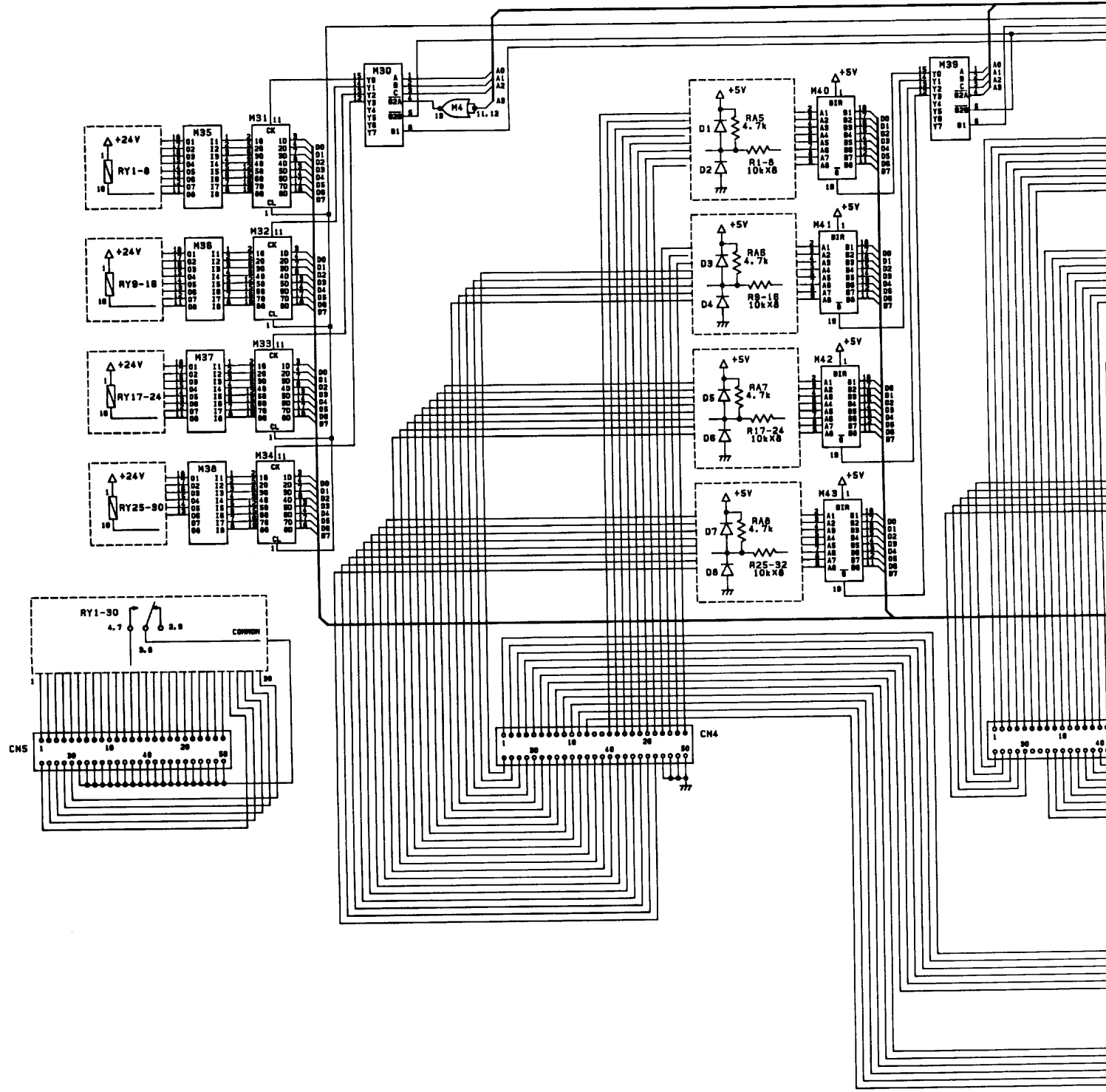
Block Diagram

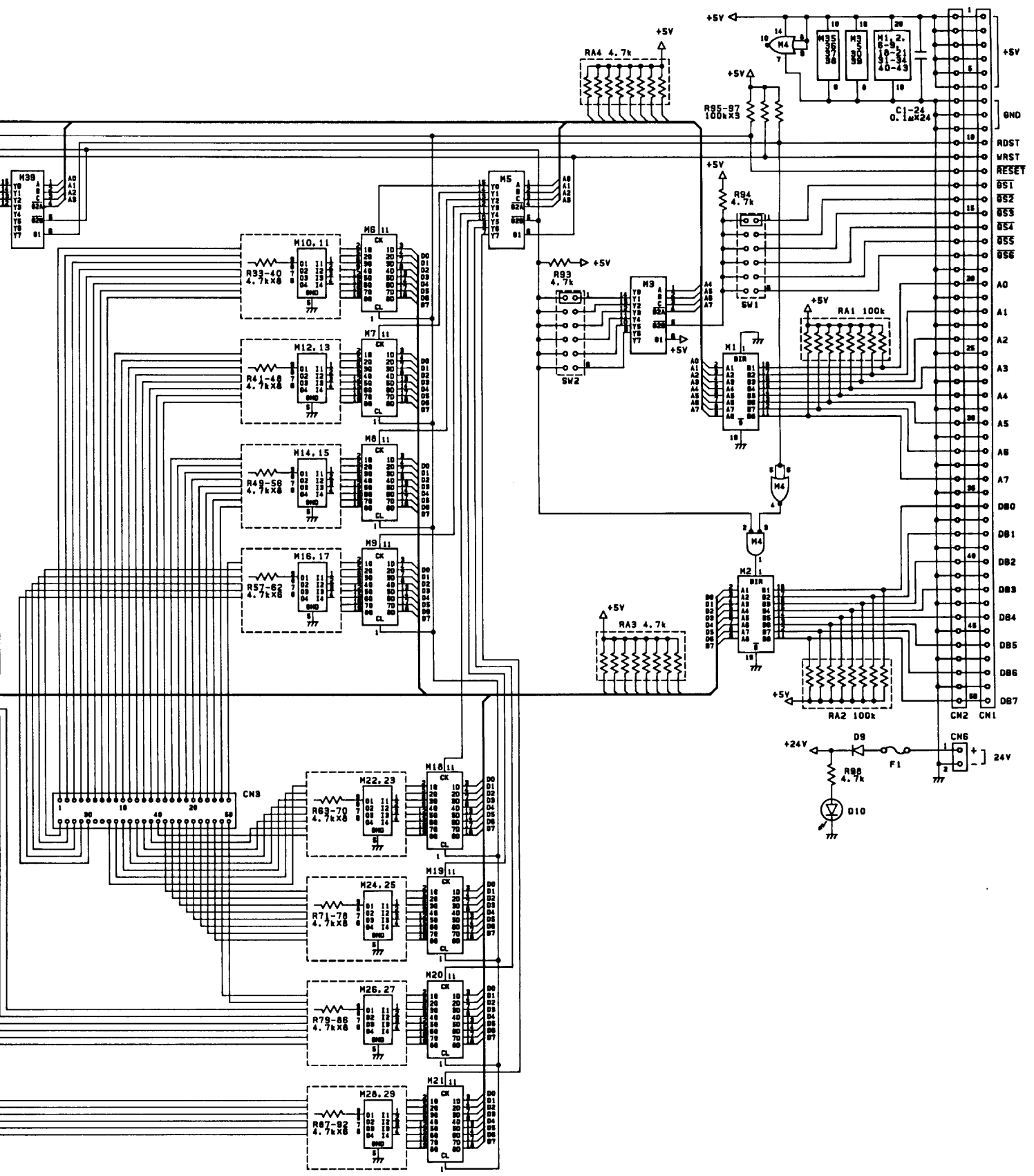


1 2 3 4 5 6 7

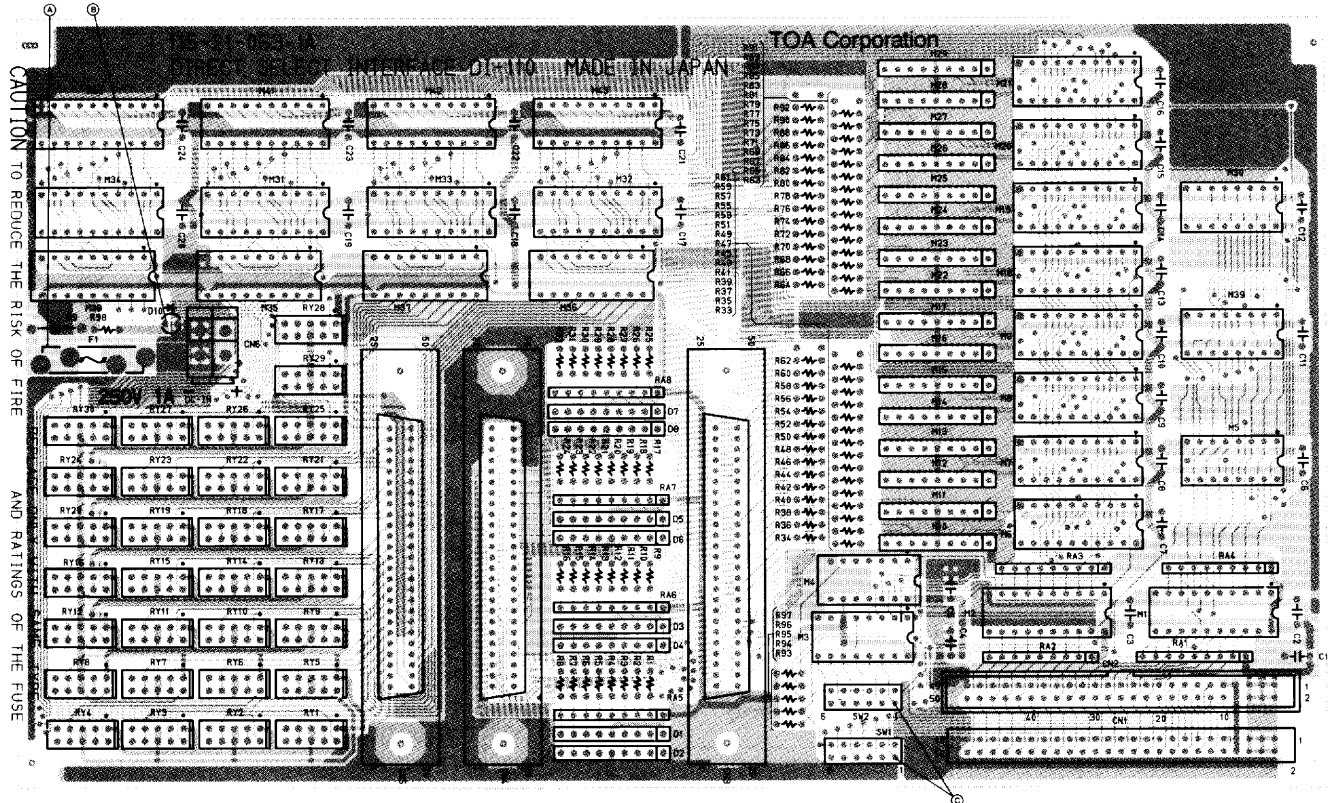
SCHEMATIC DIAGRAM DI-110

A
B
C
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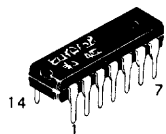
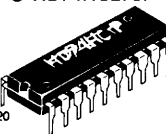
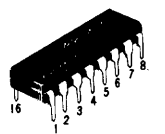
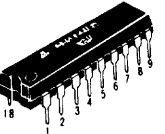
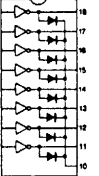
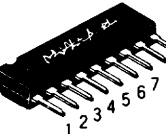
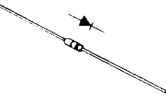
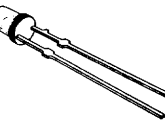




■ MOUNTING DIAGRAM DI-110

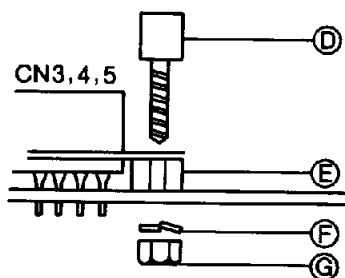


■ Semiconductors

<ul style="list-style-type: none"> ● HD74HC02P 	<ul style="list-style-type: none"> ● TD74BC645P ● HD74HC245P ● HD74HC273P 	<ul style="list-style-type: none"> ● 74HC138P 	<ul style="list-style-type: none"> ● TD62083AP  
<ul style="list-style-type: none"> ● TD62554S ● DAN801 ● DAP801 	<ul style="list-style-type: none"> ● 1SR35-200A 	<ul style="list-style-type: none"> ● SLR-54VW3F 	

Parts List for DI-110

Designator	Part Code	Description
M1, 2	111-11-880-10	IC, TD74BC645P CMOS
M3, 5, 30, 39	111-11-291-30	IC, HD74HC138P CMOS
M4	111-11-330-10	IC, HD74HC02P CMOS
M6-9, 18-21, 31-34	111-11-319-00	IC, HD74HC273P CMOS
M10-17, 22-29	111-10-110-40	IC, TD62554S
M35-38	111-06-382-20	IC, TD62083AP
M40-43	111-11-294-80	IC, HD74HC245P CMOS
D1, 3, 5, 7	111-03-657-60	DIODE NETWORK, DAN801
D2, 4, 6, 8	111-03-658-10	DIODE NETWORK, DAP801
D9	111-03-592-60	DIODE, 1SR35-200A
D10	111-08-113-40	LED, SLR-34VW5 (RED)
C1-24	113-35-820-90	CAPACITOR 0.1MF 50V
RA1, 2	112-60-246-80	RESISTOR NETWORK RM8 100K
RA3-8	112-60-230-30	RESISTOR NETWORK RM8 4.7K
RY1-30	115-16-223-10	RELAY, ATN204 (TN2-24V)
F1	115-40-235-9A	TUBE FUSE 1A
SW1, 2	123-26-700-50	TERMINAL, CONNECTOR
CN1	123-19-927-00	CONNECTION CABLE
CN2	123-26-406-40	CONNECTOR, XG4C-5031
CN3-5	123-26-730-00	CONNECTOR, 57-10500-27
CN6	123-26-702-90	TERMINAL BLOCK
PCB	115-21-063-1A H7560	PC BOARD DI110 PCB ASSY., DI110
Ⓐ	123-07-041-0A	FUSE HOLDER, S-N5057
Ⓑ	105-05-051-50	SPACER, LED
Ⓒ	124-04-105-10	JUMPER PLUG, 2P; P.G.M.
Ⓓ	102-02-308-00	SPACER
Ⓔ	102-02-041-80	SPACER
Ⓕ	106-37-031-30	WASHER, 3 X 6 X 0.5
Ⓖ	106-36-012-10	NUT, M3
	131-07-849-90	LABEL, ATTENTION
	132-21-124-00	BAG, STATIC SHIELD



3. SUB-STATIONS RS-120, RS-130

■ General Description

The TOA RS-120/RS-130 sub-stations are designed for exclusive use with the IC-100 fully electronic Institutional Communication System.

The RS-120 features all-weather and rugged construction, and is mounted to the wall using a 2-gang electrical box.

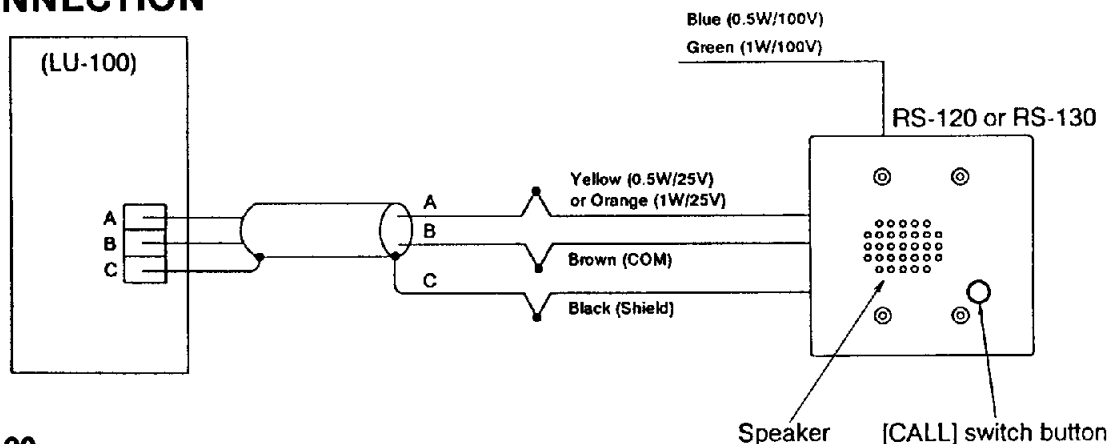
The RS-130 features all-weather construction, and is mounted to the wall using a 2-gang electrical box.

■ SPECIFICATIONS

Model No.	RS-120	RS-130
Rated Input	1W	
Rated Impedance	625 Ω (1 W/25 V), 1.25 k Ω (0.5 W/25 V), 10 k Ω (1 W/100 V), 20 k Ω (0.5 W/100 V)	
Output Sound Pressure Level	85 dB (1 m, 1 W)	
Frequency Response	500 ~ 5,000 Hz	
Internal Speaker	6 cm dynamic	
Ambient Temperature	-10 °C ~ +60 °C (+14 °F ~ +140 °F) (Temperature range not to freeze the speaker and switch)	
Finish	SUS 304 (hairline)	
Weight	730 g (1.61 lb.)	430 g (0.95 lb.)
Accessories	-	Oval head screw No.6-32UNC × 18.. 4 Oval head screw M3.5 × 5..... 4 Binding head screw M4 × 16..... 4

* Specifications are subject to change without notice.

■ CONNECTION



■ RS-120

■ Parts List for RS-120

Part Code	Description
101-25-434-00	PANEL RS120
102-02-301-7A	SLEEVE M6 L8.5
102-31-084-10	BRACKET, SPEAKER
102-31-085-0A	BRACKET, TERMINAL
102-31-086-10	COVER, SPEAKER
110-01-282-50	SPEAKER UNIT, BST-202
112-65-084-90	RESISTOR 560 OHM 5% 1W
113-24-134-70	CAPACITOR 1.5MF
113-30-520-10	CAPACITOR 0.01MF 50V
114-04-264-80	MATCHING TRANS. MT-675
115-14-371-10	SWITCH, PUSH, MB-2011W
121-01-690-60	BUTTON, PUSH
124-02-542-80	TERMINAL BLOCK, RC77-2
131-14-104-10	LABEL, MODEL
133-06-202-10	INSTRUCTION MANUAL

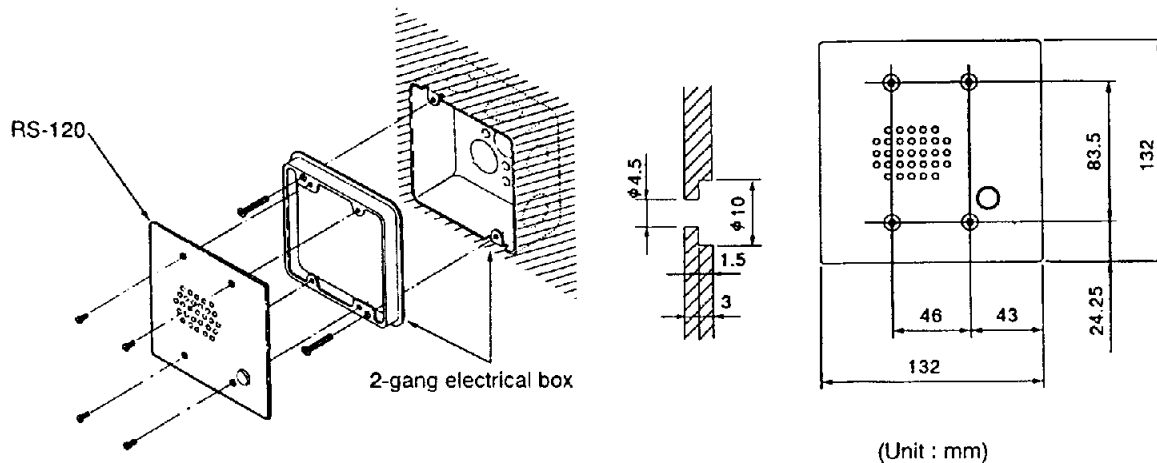
■ Parts List for RS-130

Part Code	Description
101-25-435-90	PANEL RS130
102-31-085-0A	BRACKET, TERMINAL
102-31-087-4A	BRACKET, SPEAKER
106-05-198-00	OVAL HEAD SCREW
110-01-282-50	SPEAKER UNIT, BST-202
112-65-084-90	RESISTOR 560 OHM 5% 1W
113-24-134-70	CAPACITOR 1.5MF
113-30-520-10	CAPACITOR 0.01MF 50V
114-04-264-80	MATCHING TRANS. MT-675
115-14-371-10	SWITCH, PUSH, MB-2011W
121-01-691-70	BUTTON, PUSH, AT-407(K)
124-02-542-80	TERMINAL BLOCK, RC77-2
131-14-105-00	LABEL, MODEL
133-06-202-10	INSTRUCTION MANUAL

■ MOUNTING

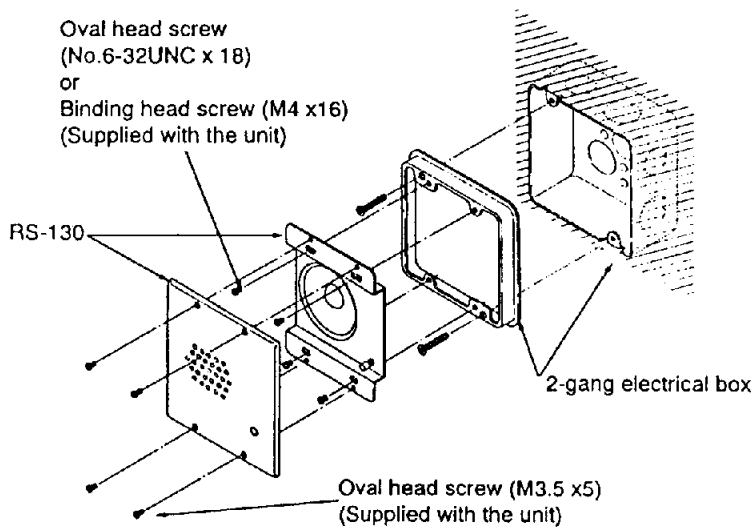
(1) Flush-mount electrical box to the RS-120 sub-station

< Mounting hole pitch and dimensions >



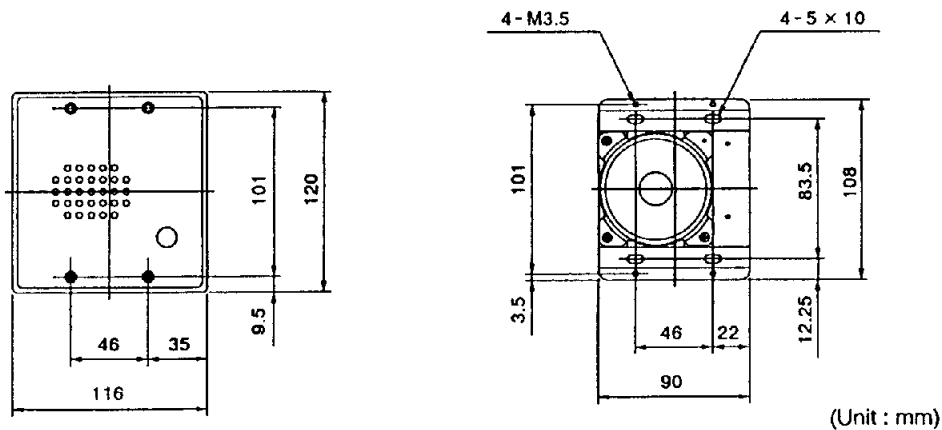
[Note] : Use M4 screws when the YC-302 is used.

(2) Flush-mount electrical box to the RS-130 sub-station



[Note] : Use M4 screws when the YC-302 is used.

< Mounting hole pitch and dimensions >



4. MAIN CONTROL UNIT MU-110

■ General Description

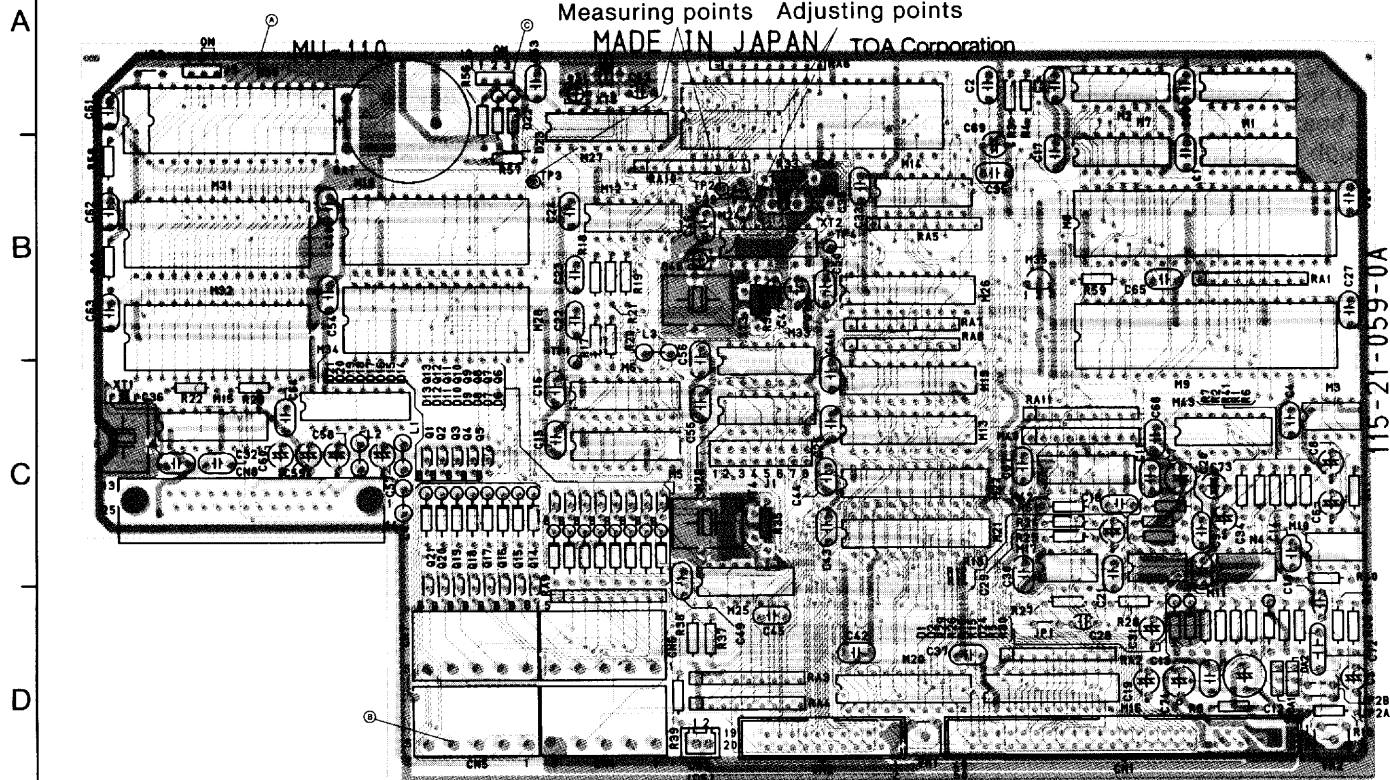
Utilizing a Z80 CPU, the Main Control Board automatically controls speech path switching functions upon reception of either a dial signal from the control station or a "call" or "privacy" signal from any of the connected sub-stations. The board also generates time-programmable signal tones, and provides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

■ SPECIFICATIONS

Power Requirements	5V DC, 600mA max. 15V DC, 60mA max.
CPU	Z80
Equipped Memory	ROM: 40Kbytes (EPROM) 8Kbytes (EEPROM) RAM: 24Kbytes
I/O Port	Speech path control output Line relay control output Display data output Personal computer I/F Tie-line data I/O Station data input
Program Source Input (1 input)	Input impedance: 33k Ω (unbalanced) Input level: -10dBV
Microphone Input (1 input)	Input impedance: 3.3k Ω (unbalanced) Input level: -70/0dBV Start Input: Dry contact
Paging Output (3 patterns)	Number of outputs: 1 (paging output possible for up to 3 Patterns selected using selection signal) Output level: -10dBV (unbalanced) Number of selection output zones: 3 (00: OFF, 01/10/11: zone selection) Open collector output (20mA, +24V max.)
External Time Signal Source Input (3 patterns)	Number of inputs: 1 (input selectable from 3 patterns using selection signal) Input impedance: 10k Ω (unbalanced) Input level: -10dBV Number of selection output patterns: 3 (00: OFF, 01/10/11: pattern selection) Open collector output (20mA, +24V max.)
External Bell Control Output (1 output)	Open collector output (20mA, +24V max.)
External Time Signal Trigger Input (6 inputs)	Dry contact input (closure-edge trigger)
Master Clock Synchronization Input	Dry contact input (closure-edge trigger)
Termination	Internal data bus: Ribbon cable connector Computer I/F: 25-pin D-sub (RS-232C) External equipment: Screwless terminal block
Dimensions (W x H x D)	265 (10.43") x 15 (0.59") x 154 (6.06") mm
Weight	295g (0.65lb)

1 2 3 4 5 6

■ MOUNTING DIAGRAM MU-110



■ ADJUSTMENTS

■ Measuring Instruments

1. Frequency counter
2. Regulated power supply

■ Adjustments

1. Adjustment of Frequency for RS232C

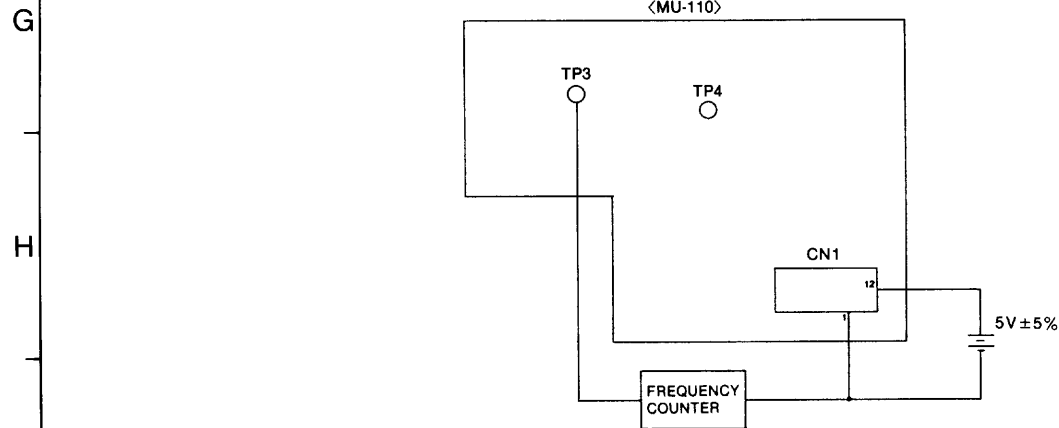
Measuring point: TP4 MU-110

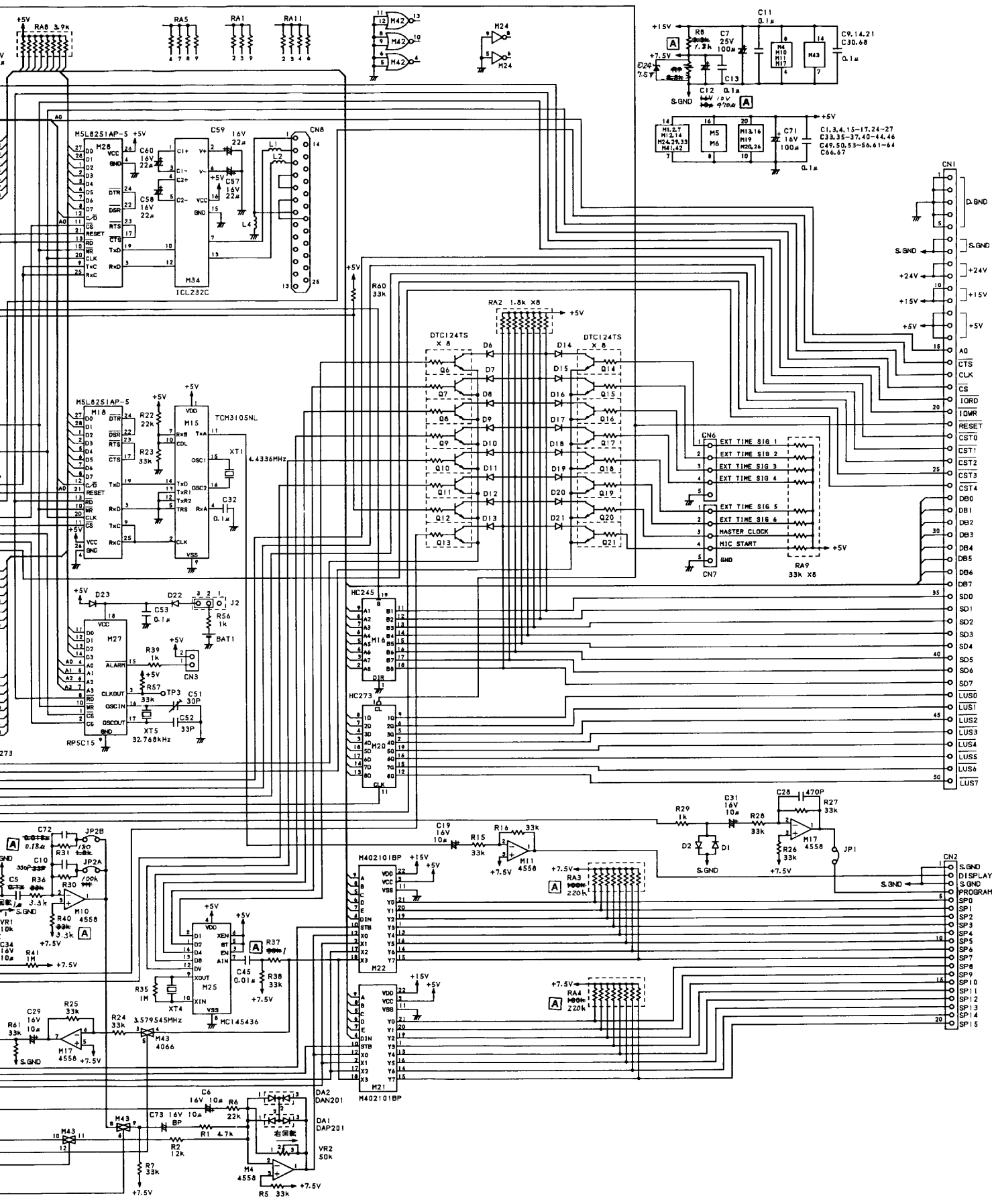
Adjust the Trimmer capacitor C48 so that the frequency is 4.9152 ± 0.0004 MHz.

2. Adjustment of TIMER CLOCK Frequency

Measuring point: TP3 of MU-110

Adjust the Trimmer capacitor C51 so that the frequency is 16.384 ± 0.0005 kHz.





■ Parts List for MU-110

Designator	Part Code	Description
M1, 41, 42	111-11-330-10	IC, HD74HC02P CMOS
M2, 12, 24	111-11-329-50	IC, TC74HC004P CMOS
M3	111-11-376-50	IC, YM3014B NMOS
M4, 10, 11, 17	111-06-093-30	IC, NJM4558DD OP-AMP.
M5, 6	111-10-003-10	IC, HD74LS138P TTL
M7	111-11-220-10	IC, MC74HC00N CMOS
M8	111-11-469-00	IC, HD63B01V1J60P CMOS
M9	111-11-375-40	IC, YM2203C NMOS
M13, 19, 20	111-11-319-00	IC, HD74HC273P CMOS
M14	111-11-321-50	IC, HD74HC32P CMOS
M15	111-11-514-70	IC, TCM3105NL CMOS
M16, 26	111-11-294-80	IC, HD74HC245P CMOS
M18, 28	111-11-693-50	IC, M5M82C51AP CMOS
M21, 22	111-11-405-60	IC, M402101BP
M23	111-11-217-50	IC, LH0080B NMOS
M25	111-11-515-60	IC, MC14536 CMOS
M27	111-11-452-00	IC, RP5C15 CMOS
M29, 33	111-11-401-20	IC, HD74HC393P CMOS
M30	211-91-065-30	IC, HN27C101 V1.10 (NEW VERSION)
	211-91-714-8B	IC, HN27C512 V1.10 (OLD VERSION)
M31	111-11-513-00	IC, HN58C65P25 CMOS
M32	111-11-450-60	IC, SRAM62256LP CMOS
M34	111-11-446-10	IC, ICL232CPE CMOS
M35	111-06-521-90	IC, S-8054ALB
M40	111-10-110-40	IC, TD6254S
M43	111-11-061-20	IC, HD14066BP CMOS
Q1-5	111-02-306-2R	TRANSISTOR, DTC143ES
Q6-21	111-02-382-00	TRANSISTOR, DTC124TS
D1, 2, 6-21	111-03-724-70	DIODE, 1SS254
DA1	111-03-327-80	DIODE, NETWORK, DAP201
DA2	111-03-328-30	DIODE, NETWORK, DAN201
D22, 23	111-03-599-30	DIODE, SD101C
D24	111-03-450-10	DIODE, ZENER, HZ7-C-2
C1, 3, 4, 9, 11, 13, 14-17, 21, 24-27, 30, 33, 35-37, 40-44, 46, 49, 50, 53-56, 61-64, 66-68	113-35-820-90	CAPACITOR 0.1MF 50V

How to distinguish new ROM

New ROM has indication of "1M" just near the model label on PC board.

Designator	Part Code	Description
C2, 32, 65	113-30-435-60	CAPACITOR 0.1MF 50V
C5	113-02-943-30	CAPACITOR 1MF 50V
C6, 8, 19, 29, 31, 34	113-02-931-60	CAPACITOR 10MF 16V
C7	113-02-657-50	CAPACITOR 100MF 25V
C10, 38, 39, 52	113-35-049-80	CAPACITOR 33PF CH 50V
C12	113-02-638-00	CAPACITOR 470MF 10V
C18, 20, 22, 45	113-30-407-50	CAPACITOR 0.01MF 5% 50V
C23	113-23-240-4F	CAPACITOR 6800PF 50V
C28	113-35-209-40	CAPACITOR 470PF 10% 50V
C47	113-35-031-90	CAPACITOR 18PF 50V
C48, 51	113-21-026-60	CAPACITOR 30PF 100V
C57-60	113-02-932-90	CAPACITOR 22MF 16V
C69, 70	113-02-645-00	CAPACITOR 47MF 16V
C71	113-02-646-10	CAPACITOR 100MF 16V
C72	113-30-438-50	CAPACITOR 0.18MF 50V
C73	113-02-880-50	CAPACITOR 10MF BP 16V
R20	112-56-402-30	RESISTOR 150K OHM 1%1/4W
RA1, 6, 10	112-60-234-90	RESISTOR NETWORK RM8 10K
RA2	112-60-225-10	RESISTOR NETWORK RML 1.8K
RA3, 4	112-60-250-30	RESISTOR NETWORK RM8 220K
RA5, 7, 8	112-60-229-70	RESISTOR NETWORK RM8 3.9K
RA9, 11	112-60-240-20	RESISTOR NETWORK RM8 33K
BAT1	115-42-047-60	BATTERY, LITHIUM, CR2430
L1-4	115-44-038-40	FILTER, BLO2RN2-R62
VR1	112-06-428-60	POT., 10K OHM (B); ADJ
VR2	112-06-430-90	POT., 50K OHM (B)
CN1	123-26-406-40	CONNECTOR, XG4C-5031
CN2	123-26-405-30	CONNECTOR, XG4C-2031
CN3	123-16-333-20	CONNECTOR, B2B-XH-A(WH)
CN4-7	123-26-420-60	TERMINAL BLOCK, 5P
CN8	123-05-217-30	CONNECTOR, 25P
TP1-4	124-07-020-80	CHECK PIN
J1	124-07-060-80	TERMINAL, CONNECTOR
J2, 3	124-07-053-40	TERMINAL, CONNECTOR
XT1	115-45-462-40	X-TAL, HC49/U 4.433618MHZ
XT2	115-45-240-80	RESONATOR, 4MHZ; CSA4.00M
XT3	115-45-376-60	X-TAL, HC-49/U 4.9152MHZ
XT4	115-45-184-90	X-TAL, 3.57945MHZ
XT5	115-45-380-70	X-TAL, DT-26S 32.768KHZ
PCB	115-21-059-0A H2840	PC BOARD MU110 PCB ASSY., MU110
A	123-05-216-00	SOCKET, IC, 32P
B	124-07-033-40	TERMINAL
C	124-04-105-10	JUMPER PLUG, 2P; P.G.M.
	131-07-849-90	LABEL, ATTENTION
	132-21-124-00	BAG, STATIC SHIELD

OHM
1.0
1.1
1.2
1.3
1.5
1.6
1.8
2.0
2.2
2.4
2.7
3.0
3.3
3.6
3.9
4.3
4.7
5.1
5.6
6.2
6.8
7.5
8.2
9.1
10
11
12

■ Sem

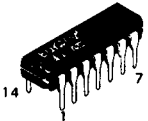
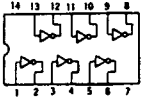
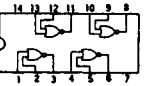

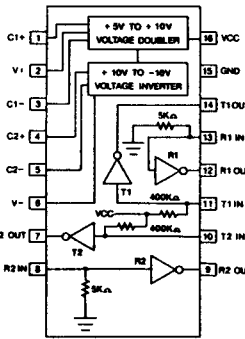

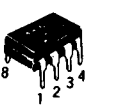
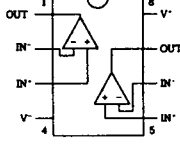

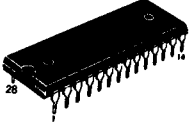
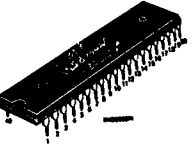
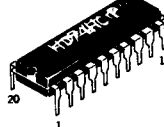
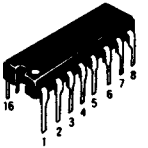

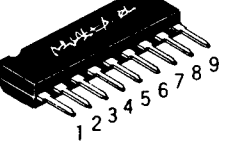
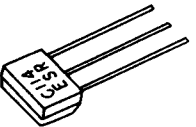
- HD
- TC
- HD
- HD
- MC

- 74L
- HD

CARBON RESISTORS (1/6 watt, ±5% tolerance)

OHM	Part Code	OHM	Part Code	OHM	Part Code	OHM	Part Code	OHM	Part Code	OHM	Part Code
1.0	112-31-330-40	13	112-31-357-30	180	112-31-384-50	2.4 k	112-31-411-80	33 k	112-31-438-30	430 k	112-31-465-70
1.1	112-31-331-50	15	112-31-358-80	200	112-31-385-40	2.7 k	112-31-412-10	36 k	112-31-439-00	470 k	112-31-466-80
1.2	112-31-332-80	16	112-31-359-50	220	112-31-386-50	3.0 k	112-31-413-60	39 k	112-31-440-80	510 k	112-31-467-10
1.3	112-31-333-30	18	112-31-360-70	240	112-31-387-80	3.3 k	112-31-414-30	43 k	112-31-441-90	560 k	112-31-468-60
1.5	112-31-334-00	20	112-31-361-80	270	112-31-388-30	3.6 k	112-31-415-20	47 k	112-31-442-20	620 k	112-31-469-30
1.6	112-31-335-90	22	112-31-362-10	300	112-31-389-00	3.9 k	112-31-416-30	51 k	112-31-443-70	680 k	112-31-470-70
1.8	112-31-336-00	24	112-31-363-60	330	112-31-390-80	4.3 k	112-31-417-60	56 k	112-31-444-40	750 k	112-31-471-80
2.0	112-31-337-30	27	112-31-364-30	360	112-31-391-90	4.7 k	112-31-418-10	62 k	112-31-445-30	820 k	112-31-472-10
2.2	112-31-338-80	30	112-31-365-20	390	112-31-392-20	5.1 k	112-31-419-80	68 k	112-31-446-40	910 k	112-31-473-60
2.4	112-31-339-50	33	112-31-366-30	430	112-31-393-70	5.6 k	112-31-420-20	75 k	112-31-447-70	1 M	112-31-474-30
2.7	112-31-340-30	36	112-31-367-60	470	112-31-394-40	6.2 k	112-31-421-30	82 k	112-31-448-20		
3.0	112-31-341-40	39	112-31-368-10	510	112-31-395-30	6.8 k	112-31-422-60	91 k	112-31-449-90		
3.3	112-31-342-70	43	112-31-369-80	560	112-31-396-40	7.5 k	112-31-423-10	100 k	112-31-450-90		
3.6	112-31-343-20	47	112-31-370-20	620	112-31-397-70	8.2 k	112-31-424-80	110 k	112-31-451-00		
3.9	112-31-344-90	51	112-31-371-30	680	112-31-398-20	9.1 k	112-31-425-70	120 k	112-31-452-30		
4.3	112-31-345-80	56	112-31-372-60	750	112-31-399-90	10 k	112-31-426-80	130 k	112-31-453-80		
4.7	112-31-346-90	62	112-31-373-10	820	112-31-400-40	11 k	112-31-427-10	150 k	112-31-454-50		
5.1	112-31-347-20	68	112-31-374-80	910	112-31-401-50	12 k	112-31-428-60	160 k	112-31-455-40		
5.6	112-31-348-70	75	112-31-375-70	1 k	112-31-402-80	13 k	112-31-429-30	180 k	112-31-456-50		
6.2	112-31-349-40	82	112-31-376-80	1.1 k	112-31-403-30	15 k	112-31-430-90	200 k	112-31-457-80		
6.8	112-31-350-40	91	112-31-377-10	1.2 k	112-31-404-00	16 k	112-31-431-00	220 k	112-31-458-30		
7.5	112-31-351-50	100	112-31-378-60	1.3 k	112-31-405-90	18 k	112-31-432-30	240 k	112-31-459-00		
8.2	112-31-352-80	110	112-31-379-30	1.5 k	112-31-406-00	20 k	112-31-433-80	270 k	112-31-460-20		
9.1	112-31-353-30	120	112-31-380-90	1.6 k	112-31-407-30	22 k	112-31-434-50	300 k	112-31-461-30		
10	112-31-354-00	130	112-31-381-00	1.8 k	112-31-408-80	24 k	112-31-435-40	330 k	112-31-462-60		
11	112-31-355-90	150	112-31-382-30	2.0 k	112-31-409-50	27 k	112-31-436-50	360 k	112-31-463-10		
12	112-31-356-00	160	112-31-383-80	2.2 k	112-31-410-70	30 k	112-31-437-80	390 k	112-31-464-80		

■ Semiconductos

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