AV256

INSTALLATION GUIDE

Version number 1.0 issued March 2001

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SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Introduction

This manual provides detail procedures for installing the **Aristel** AV-256. Read this entire section before proceeding with the actual installation.
The National Electrical Code (NEC) requires the Local operation telephone company (teleco) to provide primary protection devices on telephone lines terminated at customer's site. Check the entry point to see that a primary protection device is installed. If no such device is presented notify the telecom before proceeding with installation.

1. Site Requirement

The KSU should be installed in a clean, dry, secure location that prevent access by unauthorized personnel. This location must have adequate ventilation and have a temperature range that does not exceed 32 to 113 degree F (0 to 45 degree C) with a 10^{C} to 95^{c} non-condensing, relative humidity.
The installation site should provide ample room to mount the KSU on the wall along with the necessary connecting blocks and any ancillary equipment. The installation site should not be located in areas subject to static electricity (e.g. dry-copiers), or vibration (e.g. heavy machinery).
The customer must provide a dedicated NEMA 5-15R outlet with 115VAC/60Hz

(230VAC/50Hz) and a 15 Amp circuit. A separate earth ground is required in addition to the third wire ground on the AC circuit. If a music source or optional external paging equipment is installed, it must be connected to separate AC circuit other than the system's dedicated AC line. **ONLY THE POWER SUPPLY SHOULD BE CONNECTED TO THE DEDICATED AC OUTLET.**

2. Equipment Requirement

Before installing the equipment, carefully inspect packages for evidence of external damage or possible damage to the contents. Then compare the equipment received to a list of equipment order to ensure that all components are on site.

The following materials are required to install the system:

- Exterior grade plywood back board for the KSU.
- 20-pairs Amphenol cable (WP5007) with male connector at one for connection to Amphenol female connector on internal station interface (A2STUA or A2HYUA or A2SLUA or A4STUA or A4HYUA or A4SLUA).
- Two-pairs or three-pairs (for OHCA station) twisted station cable.
- Grounding wire (14 AWG).
- Connection blocks (66M1-50 type) with bridging clips.
- Modular station jacks (625A4, 625F4, or equivalent with screw terminals).
- Appropriate mounting hardware.

3. Power supply and KSU installation

- Attach the plywood backboard in the designation location with appropriate fasteners.
- A surge protector should be installed at the dedicated AC receptacle.
- Connect 20-pairs male Amphenol cable to the female Amphenol connector on internal station interface (A4STUA or A4HYUA or A4SLUA/C). Punch the twisted 1-pair or 2-pairs or 3-pairs from the end of male Amphenol cable to the connecting blocks to the terminals.
- Connect the plugs from RJ11 jack on CO Line Interface to the exchange CO Line for connecting external CO Line.

4. System Modules

Model	Description	Remark
A2CBPA	**MAIN CABINET**, consisting of (Metal Cabinet) + (A2PSUA)	Standard Shipment
A2PSUA	**SWITCHING POWER SUPPLY UNIT**	Spare Part
A4MBUA	**MOTHER BOARD UNIT** (8 I/O Interface Slots)	Standard Card
A4MPUA	**MAIN PROCESSING UNIT**	Standard Card
A4IPUA	**INTERFACE PROCESSING UNIT**	Standard Card
A2TKUA	**TRUNK UNIT**, consisting of 4 CO Line Ports and 2 Ports per Line	Expansion Card
A2DTKA	**ISDN TRUNK UNIT**, consisting of 4 ISDN CO Line Ports (EURO ISDN S_0 interface, 2B+D/port)	Expansion Card
A2STUA	**KEY STATION UNIT**, consisting of 8 Key Station Ports and One Port per Station	Expansion Card
A2HYUA	**HYBRID STATION UNIT**, consisting of (2 Key Station Ports) + (6 Single Line Station Ports) and One Port per Station	Expansion Card
A2SLUA/C	**SINGLE LINE STATION UNIT**, consisting of 8 Single Line Station Ports and One Port per Station	Expansion Card
A2VSUA	**VOICE SERVICE UNIT**, consisting of 4 Voice Channels (60 seconds per channel)	Optional Card
A2MFCA	**MULTI FUNCTION CARD**, consisting of (4 Sensors) + (4 Relays)	Optional Card
A2MDCA	**METERING DETECTION CARD** (for both 12KHz and 16KHz Metering Pulse)	Optional Card
A2RSCA	**RS232 CARD** (for SMDR, Serial Port Design)	Optional Card
A2RPCA	**REMOTE PROGRAMMING CARD** (standard Modem design)	Optional Card

5. TYPES OF KEY TELEPHONE

Model	Description	Color
15 Buttons Key Telephone		
KP10XW	**STANDARD PHONE** (without LCD and Handsfree)	White
KP10XHW	**STANDARD HANDSFREE PHONE** (without LCD, but with	White

	Handsfree)	
KP10XLW	**SMALL LCD PHONE** (with Small LCD, but without Handsfree)	White
KP10XLBW	**BIG LCD PHONE** (with Big LCD, but without Handsfree)	White
KP10XDW	**SMALL LCD DELUXE PHONE** (with Small LCD and Handsfree)	White
KP10XDBW	**BIG LCD DELUXE PHONE** (with Big LCD and Handsfree)	White
KP10XC	**STANDARD PHONE** (without LCD and Handsfree)	Charcoal
KP10XHC	**STANDARD HANDSFREE PHONE** (without LCD, but with Handsfree)	Charcoal
KP10XLC	**SMALL LCD PHONE** (with Small LCD, but without Handsfree)	Charcoal
KP10XLBC	**BIG LCD PHONE** (with Big LCD, but without Handsfree)	Charcoal
KP10XDC	**SMALL LCD DELUXE PHONE** (with Small LCD and Handsfree)	Charcoal
KP10XDBC	**BIG LCD DELUXE PHONE** (with Big LCD and Handsfree)	Charcoal
25 Buttons Key Telephone		
KP10SW	**STANDARD PHONE** (without LCD and Handsfree)	White
KP10SHW	**STANDARD HANDSFREE PHONE** (without LCD, but with Handsfree)	White
KP10LW	**SMALL LCD PHONE** (with Small LCD, but without Handsfree)	White
KP10LBW	**BIG LCD PHONE** (with Big LCD, but without Handsfree)	White
KP10DW	**SMALL LCD DELUXE PHONE** (with Small LCD and Handsfree)	White
KP10DBW	**BIG LCD DELUXE PHONE** (with Big LCD and Handsfree)	White
KP10SC	**STANDARD PHONE** (without LCD and Handsfree)	Charcoal
KP10SHC	**STANDARD HANDSFREE PHONE** (without LCD, but with Handsfree)	Charcoal
KP10LC	**SMALL LCD PHONE** (with Small LCD, but without Handsfree)	Charcoal
KP10LBC	**BIG LCD PHONE** (with Big LCD, but without Handsfree)	Charcoal
KP10DC	**SMALL LCD DELUXE PHONE** (with Small LCD and Handsfree)	Charcoal
KP10DBC	**BIG LCD DELUXE PHONE** (with Big LCD and Handsfree)	Charcoal
64 Buttons Console Phone		
DSS64W	**DSS CONSOLE PHONE** (with 64 DSS buttons only)	White
DSS64C	**DSS CONSOLE PHONE** (with 64 DSS buttons only)	Charcoal

6. SPECIFICATION

CO Line	0~40 (20 per cabinet)
Key Telephones	0~255
Single Line Telephones	0~255
Auto Attendant	0~40
Door Phones	0~2 (per cabinet)
Relay Switches	0~16
Sensor Interfaces	0~16
Fax Monitor	0~10
System Battery Charger Interface	0~1 (per cabinet)
RS232 for SMDR	0~4
Remote Programming	0~1
Speed Dial	0~1200
External Music	0~1
External Paging	0~1
Intercom Paths (Local)	0~48

7. AV-256 ELECTRICAL & OTHER SPECIFICATIONS

Input AC Voltage		115 VAC± 10% (50/60 Hz)/0.57Amps 230 VAC ± 10% (50/60 Hz)/0.28Amps
Power Consumption	System	40 W
	Key Telephone	2.0 W max.
	SLT	0.85 W
	Door Phone	0.5 W
System Power Back-Up Battery		1 ~ 2 Hour (24 VDC × 6.5AH)
Loop Resistance	Key Telephone	40 Ω max.
	Door Phone	40 Ω max.
	SLT	400 Ω max.
	External Paging	600 Ω max.
	CO Line	1.5K Ω max.
Dialing Signal	Outgoing Dialing	Tone / Pulse
	Intercom Dialing	Tone / Pulse / Digital
Wiring Installation	CO Line	2 wires
	Relay Switch	2 wires
	Key Telephone	4 / 6 wires
	Sensor	2 wires
	SLT	2 wires
	External Music	2 wires
	Door Phone	2 wires
	External Paging	2 wires
	Fax Machine	2 wires
	SMDR	6 wires
Relay Switch	Type	SPDT
	Power Consumption	7A, 110VAC / 240 VAC
	Function	Door Switching, Paging, Music on Hold, …, etc.
System Dimension (mm, W × D × H)		555× 228 × 400
Key Telephone Dimension (mm)		230L × 180W × 75H
Working Temperature		0 ^{0}C ~ 45 ^{0}C (32 ^{0}F ~ 113 ^{0}F)
Working Humidity		10% ~ 90% relative non-condensing
Switch Mode		Space Division Matrix (SDM)
Control Mode		8/16 bits CPU, Registered Program

8. FEATURES LIST

System Features List

Alarm
Attendant Console Assignment
Auto-Attendant
Automatic S.O.S Security System
Automatic Line Access
Automatic Number Redial
Background Music
Be Paged
Call Duration Time Restriction
Call Forwarding (Follow Me)
Call Pick Up
Call Forwarding (All / No Answer / Busy)
Calling Proof
Camp On
Date/Time Setting
Day/Night Service
Day Time Schedule
Dialing Signal (Pulse/DTMF)
Direct Transfer
Direct Intercom Calling
Direct Inward Station Access (DISA)
Door Switch (Open/Close)
Door Phone Connection
Dual-Direction Amplifier
Easy Installation And Operation
Exclusive Hold Recall
Fax Monitor
Flash Time Setting
Flexible Ringing
Flexible Expansion
Flexible Function Key Setting
Forced Account Code
Help List

Hold Recall
Host PABX Access
Hot Line
I/O Terminal
Illegal Dialing Prevention
Incoming Paging
Message Waiting
Metering Detector
Monitoring Level
Music On Hold
Night Transfer
On Call Programming
One Touch Dialing
Overriding Level
Paging/Meet Me Paging
Password Protection
Pause
Polarity Reverse Detection
Programmable DSS Key
Relay Control
Remote Programming
Remote Maintenance
Reset Security Code
Sensor Detection
SLT Programming Digit
SLT Message Waiting Type
SLT Connection
SLT Hold Operation
SLT Busy Remind Tone Flag
Speed Dial For Both System And Private
Station Message Detail Record (SMDR)
Switching Link Maintenance
System Battery Back Up For Data
System Data Initial
System Data Print Out
Text Message
Time-Reminding Service
Toll Restriction

Trunk Administration
Trunk Queuing
Varying Range For Time Setting

Station Features List

8 Segments Volume Control
9 Segments Ringing Frequency
Absent Message
Access To System Programming
Account Code
Answer Call Waiting
Auto-Answer
Automatic Line Access
Automatic Call Back (Camp On)
Back Ground Music
Bottom Back Cabling
Calculator Function At Anytime
Call Pick-Up
Call Forward (Follow Me)
Call Waiting
Call Door Phone
Camp On
Check In
Check Out
Day/Night Service Indication
Direct Call Transfer
Direct Call Attendant
Direct Intercom Calling
Do Not Disturb (DND)
Door Switch Sensor Control
Door Phone Call Signaling
Dual Color LED
Flash (Open Loop Time Flash)
Forced Account Code
Door Phone
External Music Source
External Paging Equipment
Forced Account Code

Handsfree
Intercom Calling
Last Number Redial
LED Indication For Door Switch Sensor
Macro Key Assignment
Monitor
Movable LCD Display
Multi-Conference
Music On Hold
One Touch Dialing
Outward Dialing
Override (Barge In)
Paging/Meet Me Paging
Photo Interrupted For Hook Switch
Privacy Release
Pulse/Tone Conversion
Save Number Redial
Speed Dialing
Speed Dial Number Storage
Station Lock/Unlock
Station Morning Call Service
Toll Restriction
Tri-Status LED Indication
Trunk Queuing
Volume Digital Control
Zone Paging

9. PCB and CABINET LAYOUT

9.1 System Three-Dimensional Layout (One cabinet)

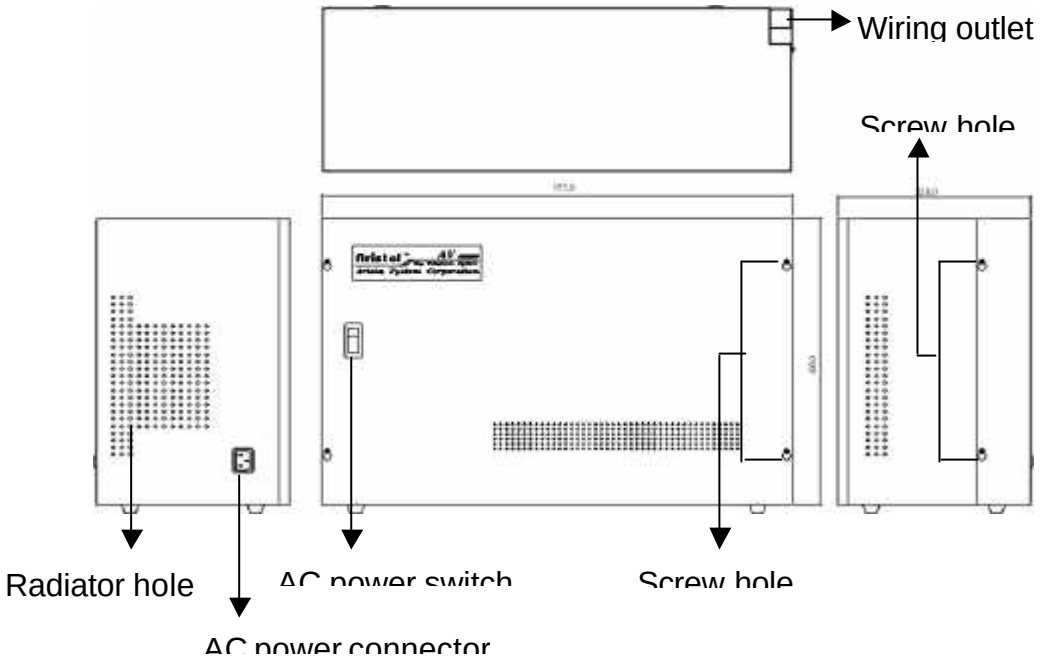


Figure 1.1 AV-256 System Three-Dimensional Layout

1. System dimension 555mm W × 228mm D × 400mm H

2. System AC Power 115/230VAC ± 10%, 60/50 Hz

9.2 AV256 System one cabinet Inter-Circuit Layout

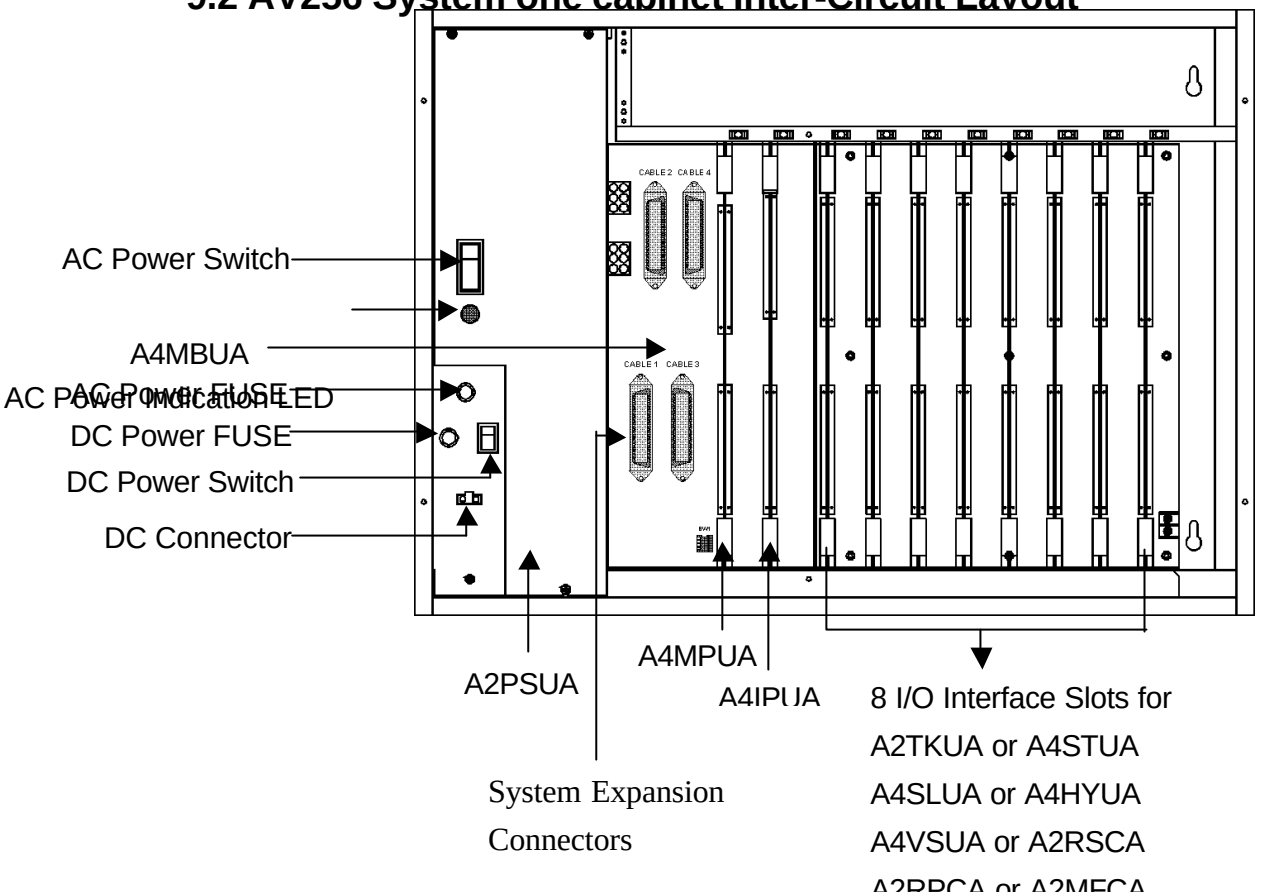


Figure 1.2 AV-256 (one cabinet) Installation Layout

1. AV-256 (one cabinet Max. Capacity): 64 Ports / 8 Slots
2. CO Line (one cabinet Max. Capacity): 20
3. Intercom Line (one cabinet Max. Capacity): 64

9.2.1 AV-256 System two cabinets Inter-Circuit Layout

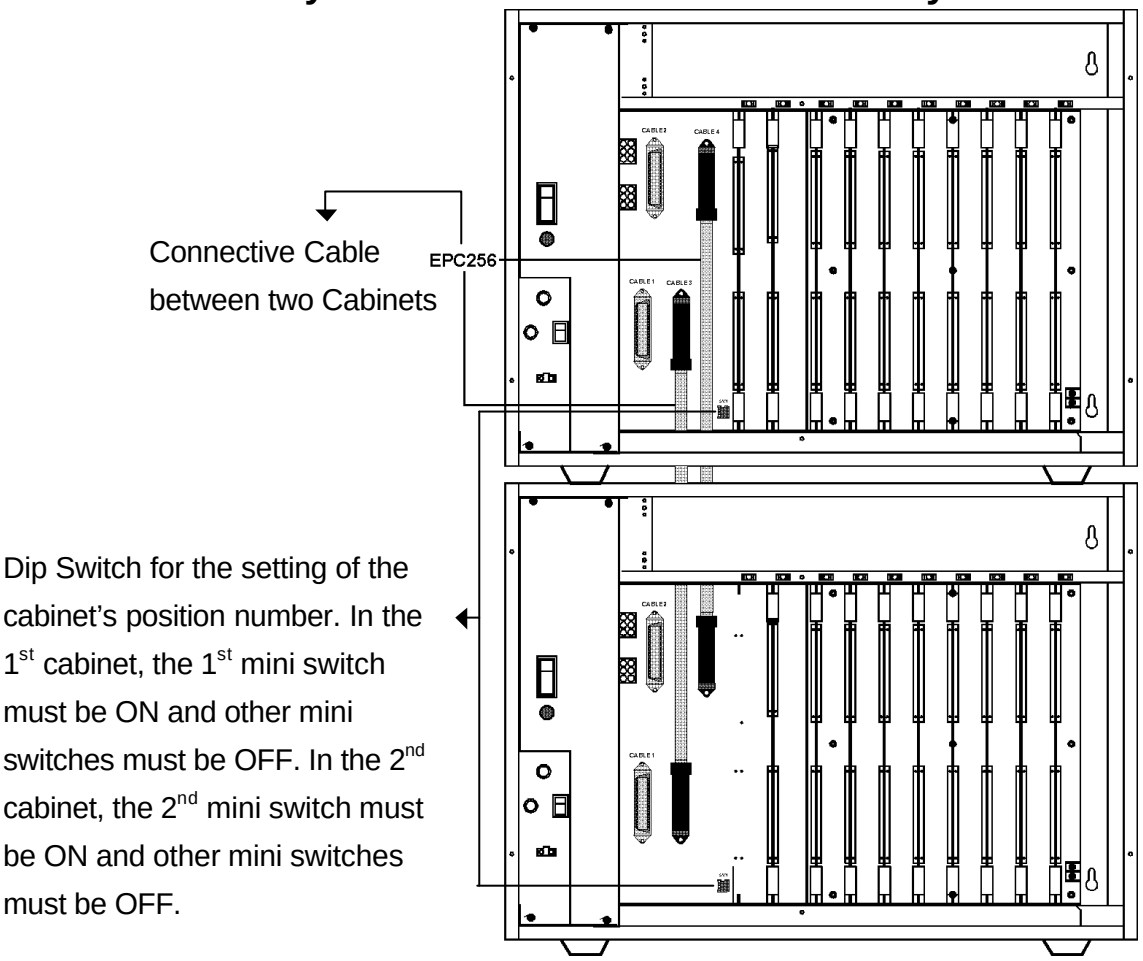


Figure 1.3 AV256 (two cabinets) Installation Layout

1. AV-256 (two cabinets Max. Capacity): 128 Ports / 16 Slots
2. CO Line (two cabinets Max. Capacity): 40
3. Intercom Line (two cabinet Max. Capacity): 128

9.2.2 AV256 System three

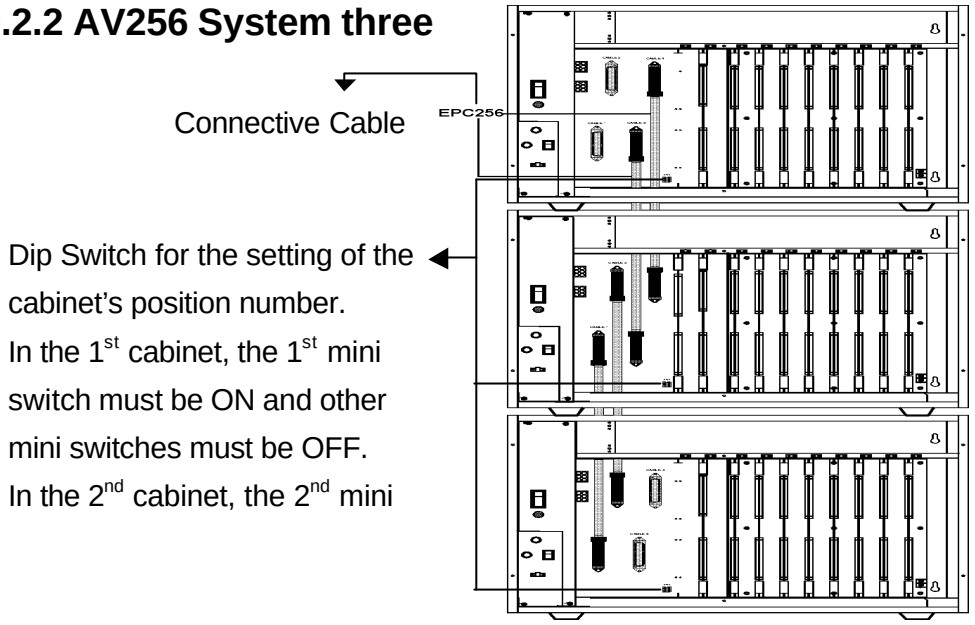
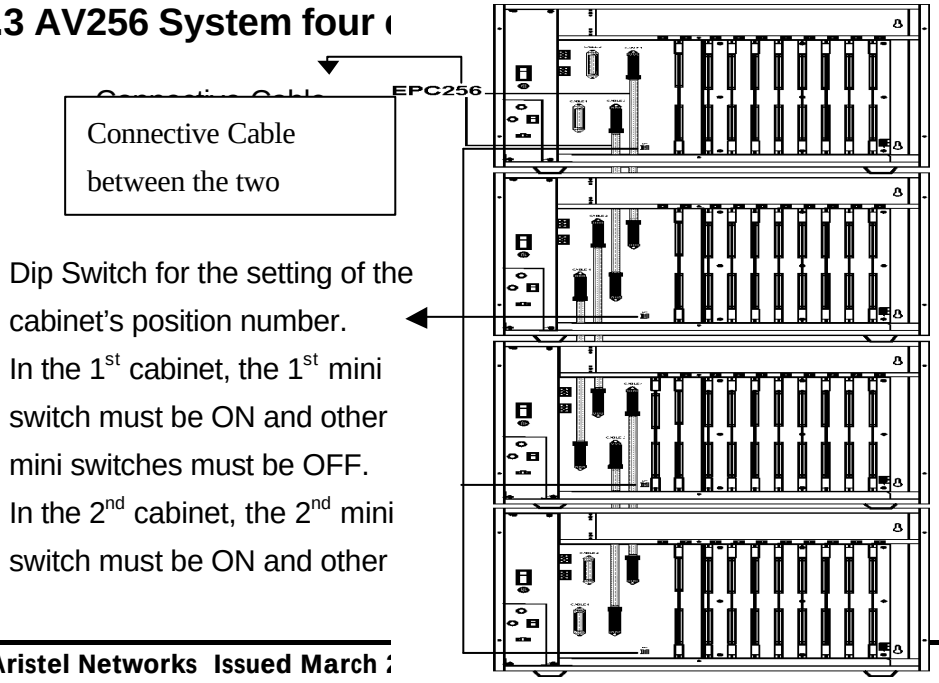


Figure 1.4 AV256 (three cabinets) Installation Layout

1. AV-256 (three cabinets Max. Capacity): 192 Ports / 24 Slots
2. CO Line (three cabinets Max. Capacity): 40
3. Intercom Line (three cabinets Max. Capacity): 192

9.2.3 AV256 System four



Mini switches must be OFF.
In the 3rd cabinet, the 3rd

Figure 1.5 AV-256 (four cabinets) Installation Layout

1. AV-256 (four cabinets Max. Capacity): 256 Ports / 32 Slots
2. CO Line (four cabinets Max. Capacity): 40
3. Intercom Line (four cabinets Max. Capacity): 256

9.3 AV-256 System Wall Mounting Installation

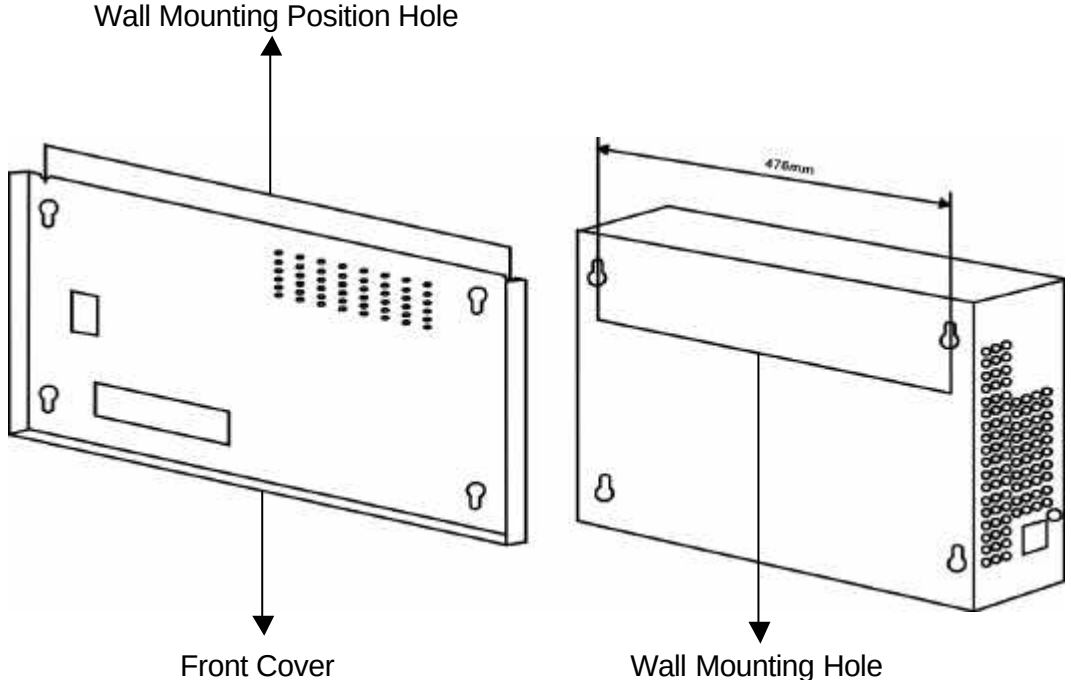


Figure 1.6 AV-256 System Wall Mount Layout

9.4 A4MBUA (Mother Board Unit)

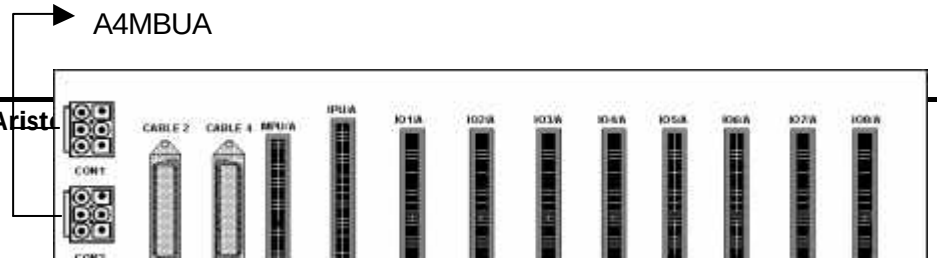
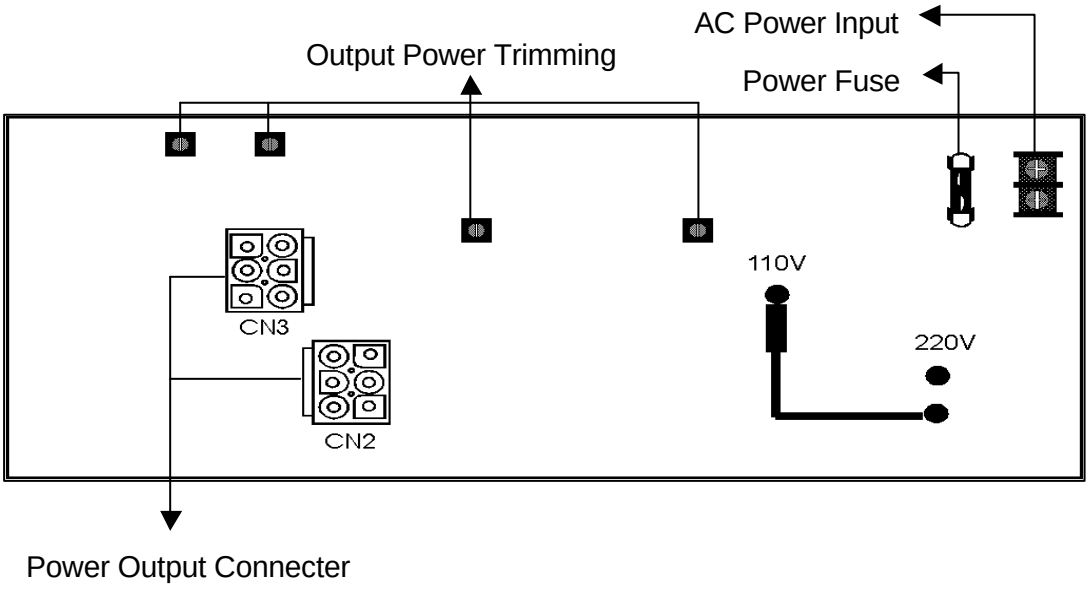


Figure 1.7 A4MBUA

9.5 A2PSUA /A2PWUA (Switching Power Supply)



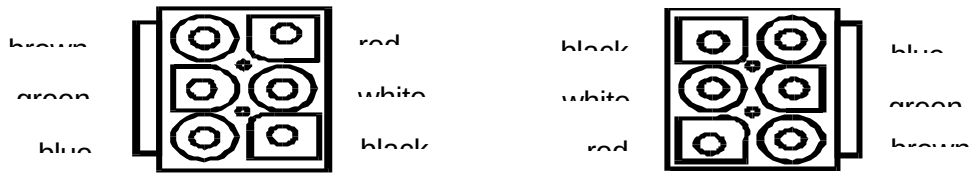


Figure 1.8 A2PWUA Module Layout

9.6 A4MPUA (Main Processing Unit)

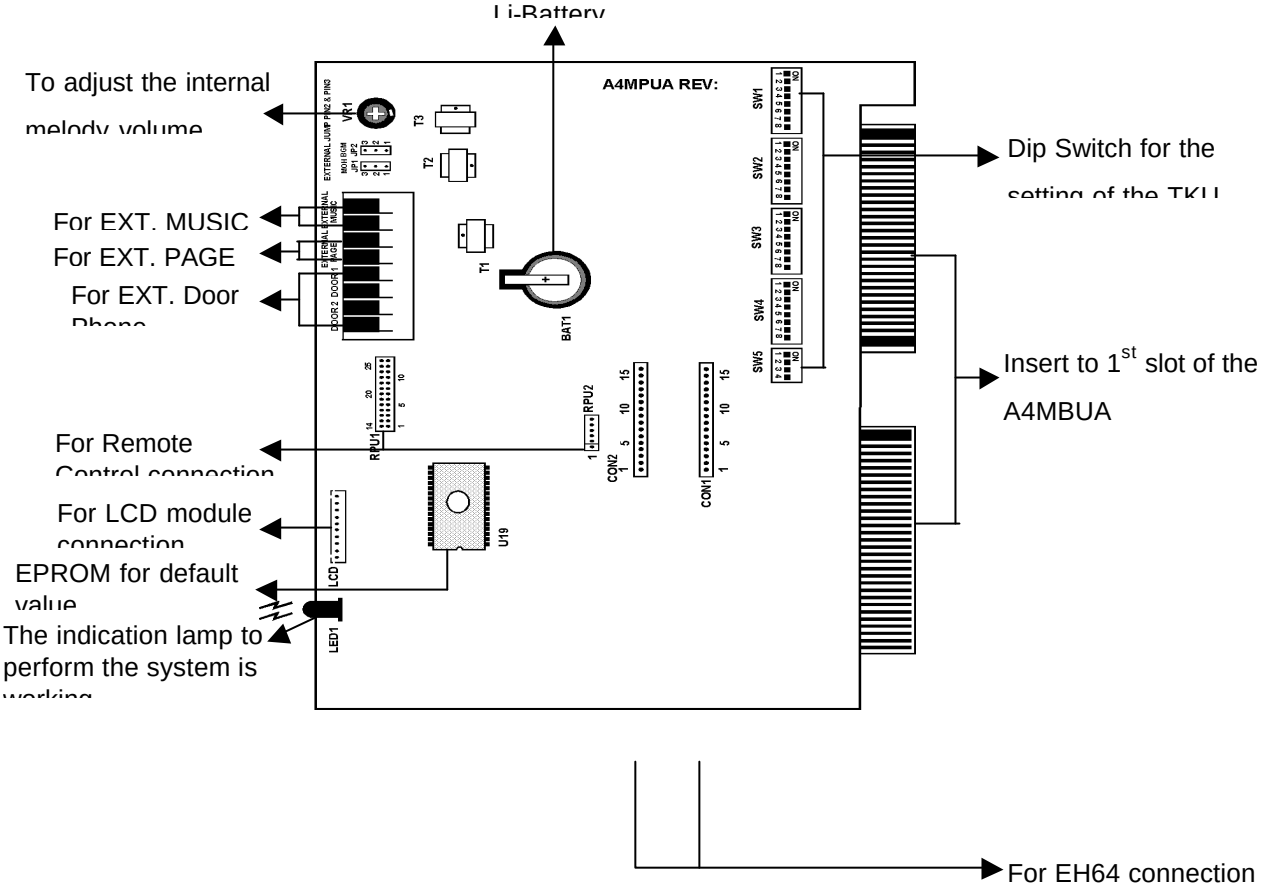


Figure 1.9 A4MPUA

TKU	SW1	SW2	SW3	SW4	SW5
1 pcs.	11111111	11111111	11111111	11111111	1111
2 pcs.	00001111	11111111	11111111	11111111	1111
3 pcs.	00000000	11111111	11111111	11111111	1111
4 pcs.	00000000	00001111	11111111	11111111	1111
ι	ι	ι	ι	ι	ι
10 pcs.	00000000	00000000	00000000	00000000	0000

9.7 A4IPUA (Interface Processing Unit)

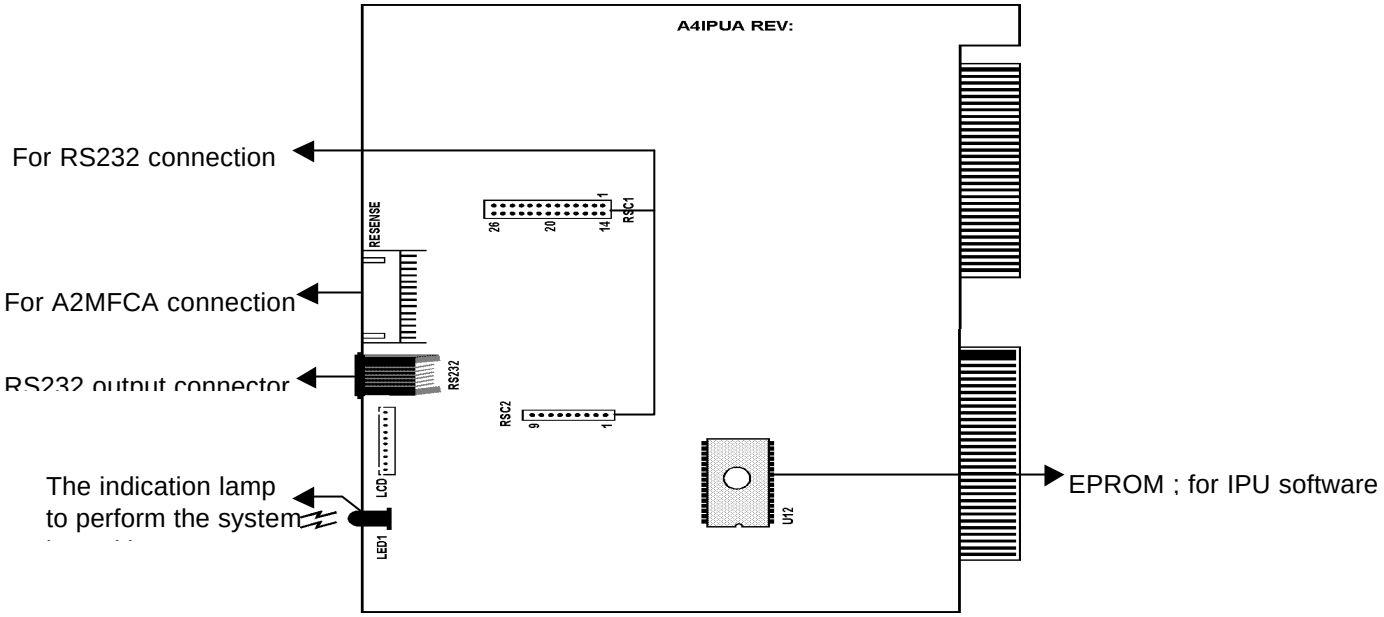


Figure 1.10 A4IPUA

9.8 A2TKUA (TRUNK UNIT, 4 TRUNK PORTS)

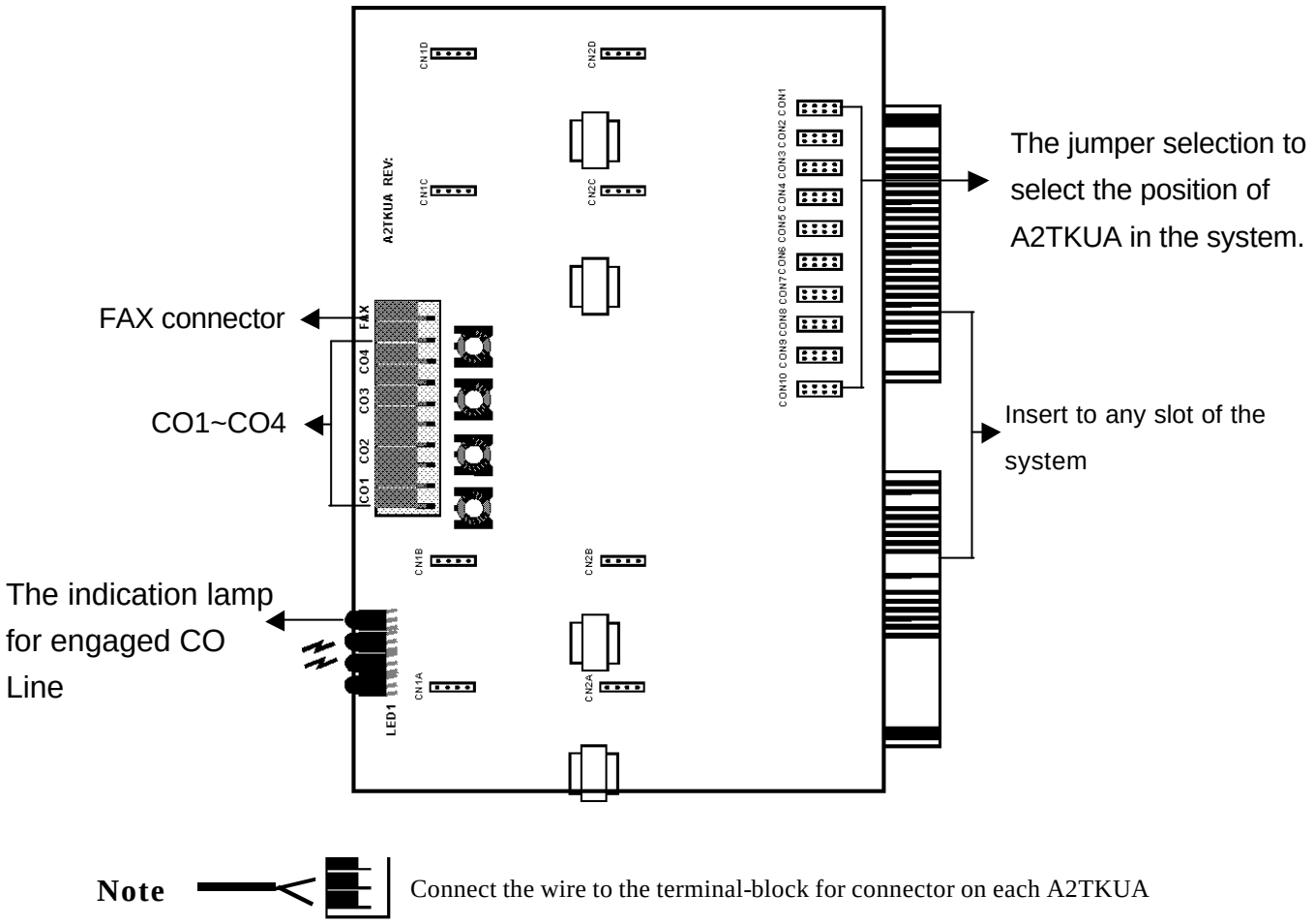


Figure 1.11 A2TKUA

Note If A2TKUA is installed in the first position among A2TKUA cards, it's CON1 must be all shorted by jumpers. If A2TKUA is installed in the second position among A2TKUA cards, then it's CON2 must be shorted by jumpers, and so on

9.9 A4STUA (KEY STATION UNIT, 8 KEY STATION PORTS)

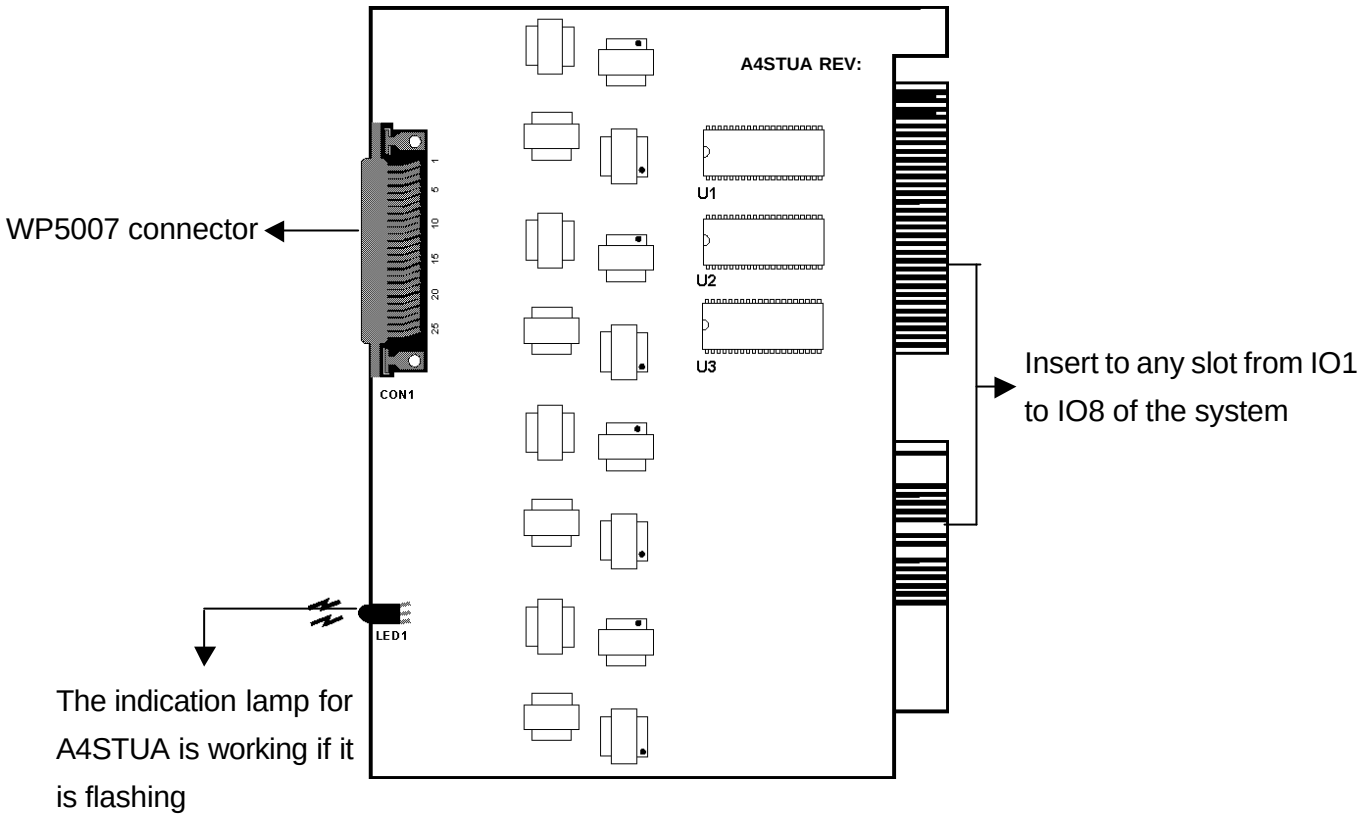


Figure 2.7 A4STUA (for AV256)

9.10 A4SLUA(Single Line Station Unit)

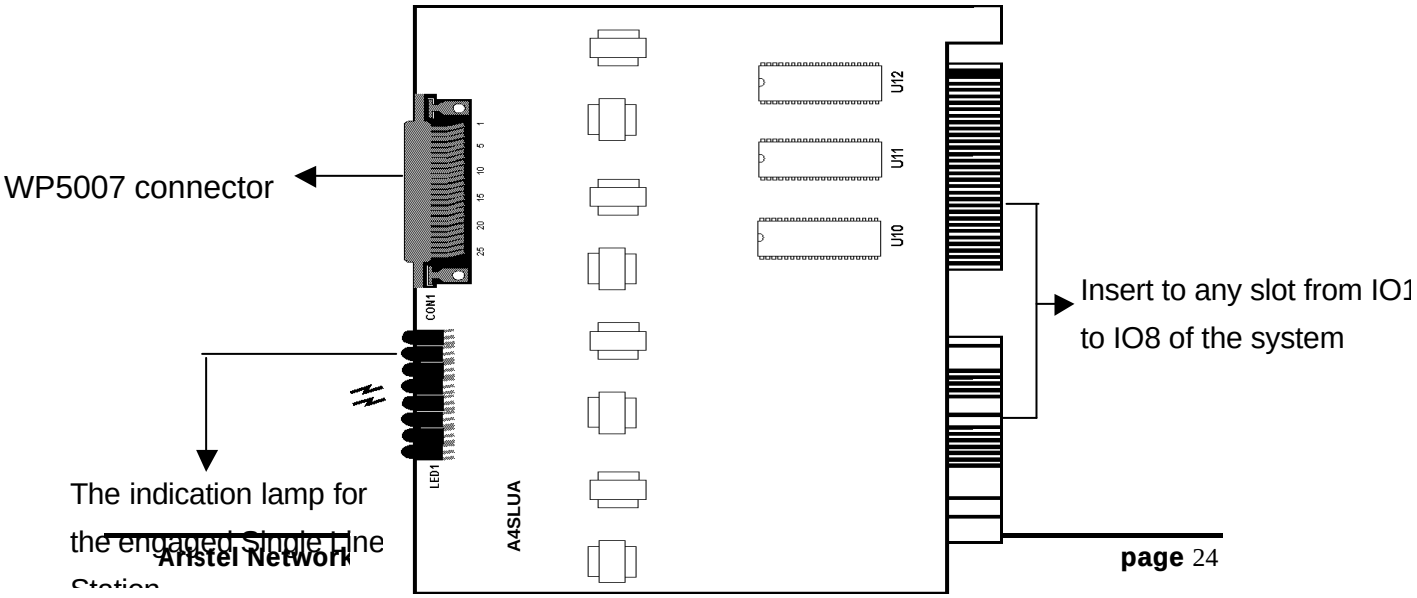


Figure 1.12 A4SLUA/C

9.11 A4HYUA (Hybrid Station Unit)

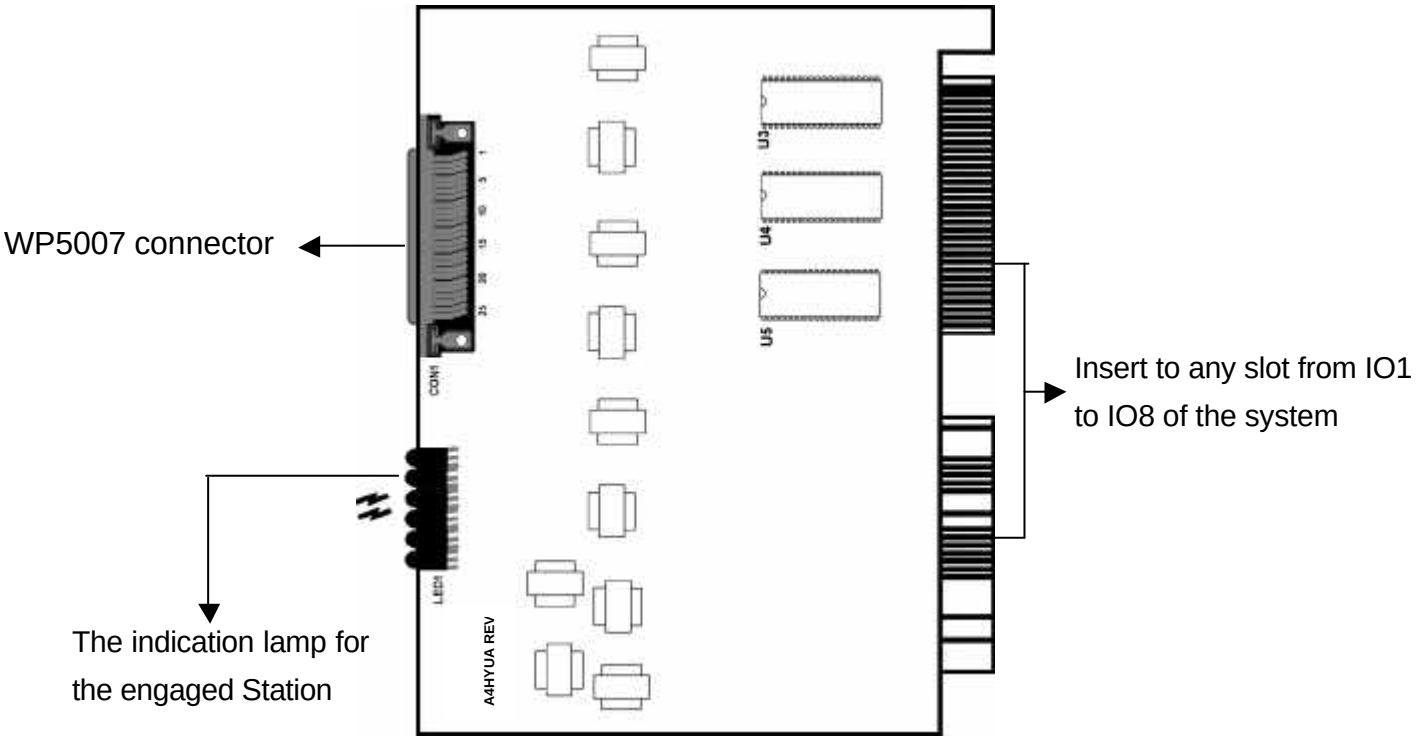


Figure 1.13 A4HYUA

Consisting of (2 Key Station Ports) + (6 Single Line Station Ports) and One Port

per Station.

9.12 A4VSUA (Voice Service Unit)

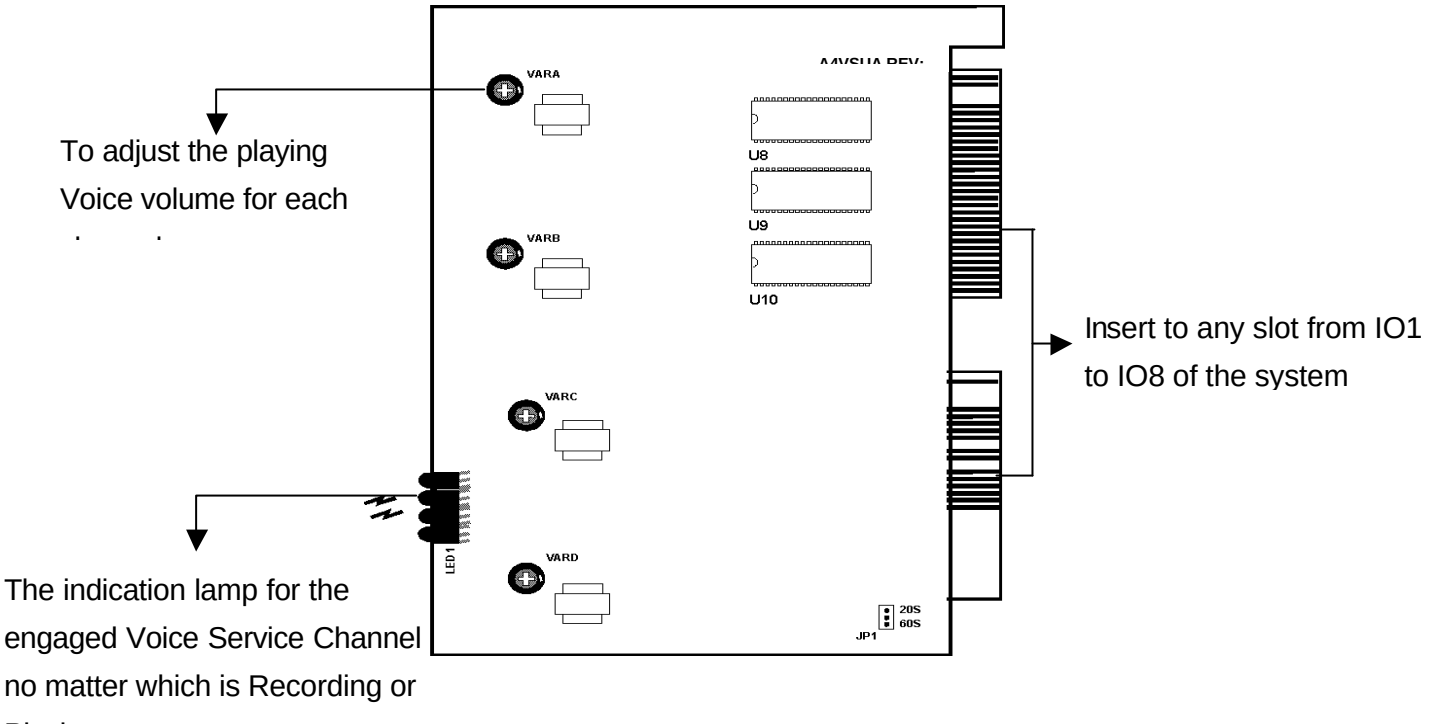


Figure 1.14 A4VSUA

PS: consisting of 4 Voice Channels (60 seconds per channel)

9.13 A2RSCA (RS232 CARD, for SMDR & Serial Port)

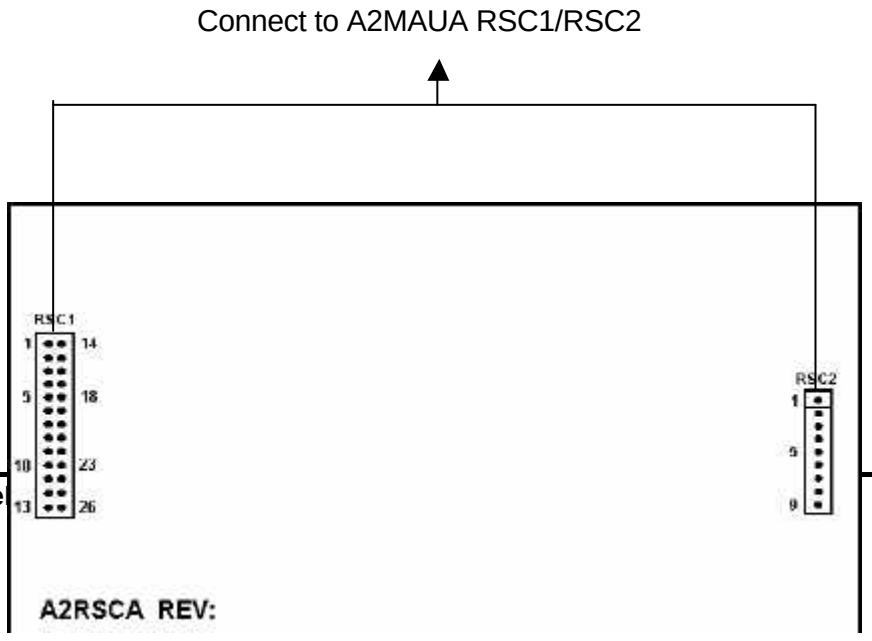


Figure 1.15 A2RSCA

9.14 A2RPCA (Remote Programming Card)

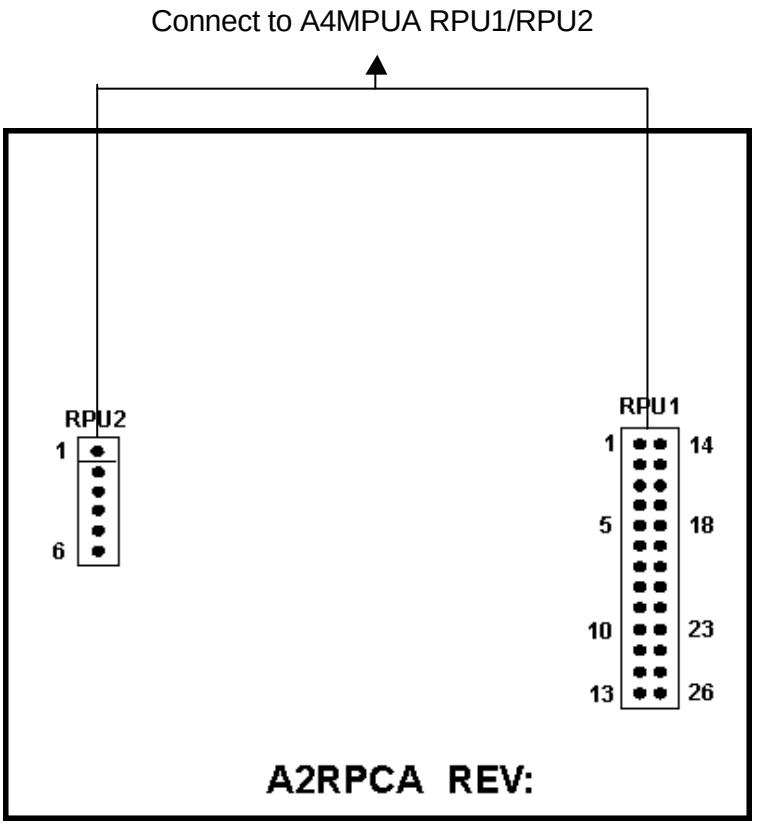


Figure 3.5 A2RPCA (for AV64/256)

9.15 A2MFCA (Multi Function Card)

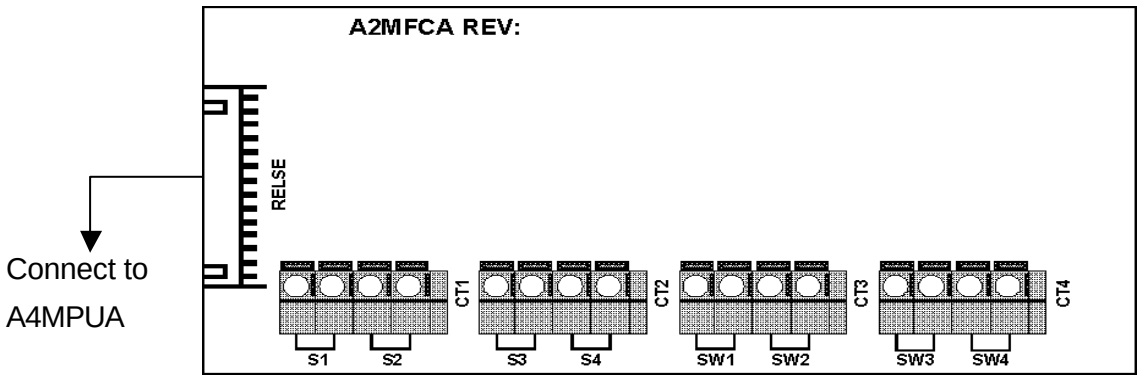


Figure 1.16 A2MFCA

Note S1~S4 ; for external sensors connection. S1 is for the 1st sensor, S2 is for

the 2nd sensor, S3 is for the 3rd sensor and S4 is for the 4th sensor.

SW1~SW4 ; for the external devices connection to system's relays for switches control. SW1 is for the 1st relay, SW2 is for the 2nd relay, SW3 is for the 3rd relay and SW4 is for the 4th relay.

9.16 WP5007 Wiring

50 Pins Female Amphenol Connector Layout

	Status		Status
Pin1	AT1 (for ST1)	Pin26	AR1(for ST1)
Pin2	BT1 (for ST1)	Pin27	BR1(for ST1)
Pin3	AT2 (for ST2)	Pin28	AR2 (for ST2)
Pin4	BT2 (for ST2)	Pin29	BR2 (for ST2)
Pin5	AT3 (for ST3)	Pin30	AR3 (for ST3)
Pin6	BT3 (for ST3)	Pin31	BR3 (for ST3)
Pin7	AT4 (for ST4)	Pin32	AR4 (for ST4)
Pin8	BT4 (for ST4)	Pin33	BR4 (for ST4)
Pin9	AT5 (for ST5)	Pin34	AR5 (for ST5)
Pin10	BT5 (for ST5)	Pin35	BR5 (for ST5)
Pin11	AT6 (for ST6)	Pin36	AR6 (for ST6)
Pin12	BT6 (for ST6)	Pin37	BR6 (for ST6)
Pin13	AT7 (for ST7)	Pin38	AR7 (for ST7)
Pin14	BT7 (for ST7)	Pin39	BR7 (for ST7)
Pin15	AT8 (for ST8)	Pin40	AR8 (for ST8)
Pin16	BT8 (for ST8)	Pin41	BR8 (for ST8)
Pin17	No Connection	Pin42	No Connection
Pin18	No Connection	Pin43	No Connection
Pin19	No Connection	Pin44	No Connection
Pin20	No Connection	Pin45	No Connection
Pin21	No Connection	Pin46	No Connection
Pin22	No Connection	Pin47	No Connection
Pin23	No Connection	Pin48	No Connection
Pin24	No Connection	Pin49	No Connection
Pin25	No Connection	Pin50	No Connection

10. System Installation

10.1 System Back-up Battery Installation

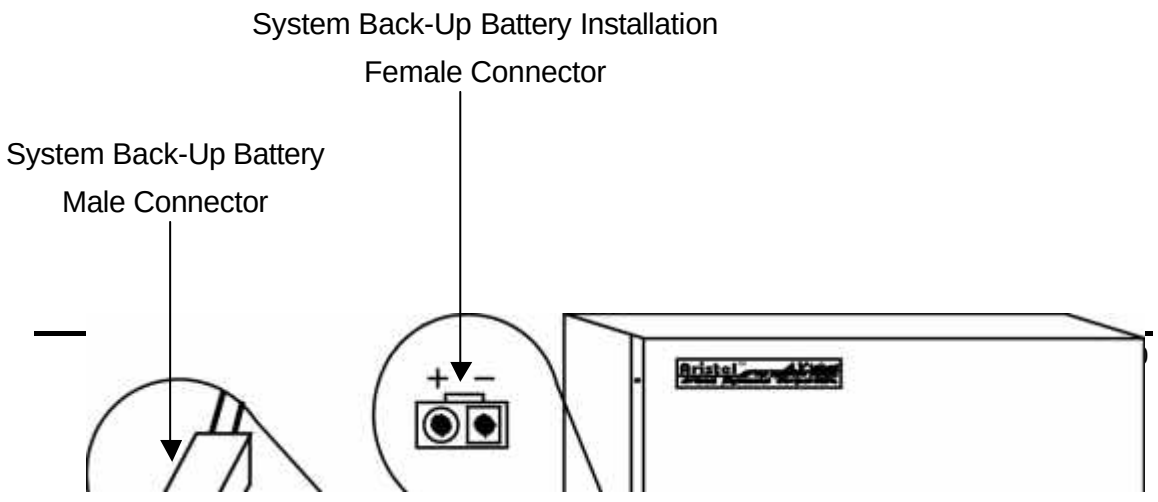


Figure 1.17 Battery Back-Up Installation Layout

10.2 FAX machine Installation

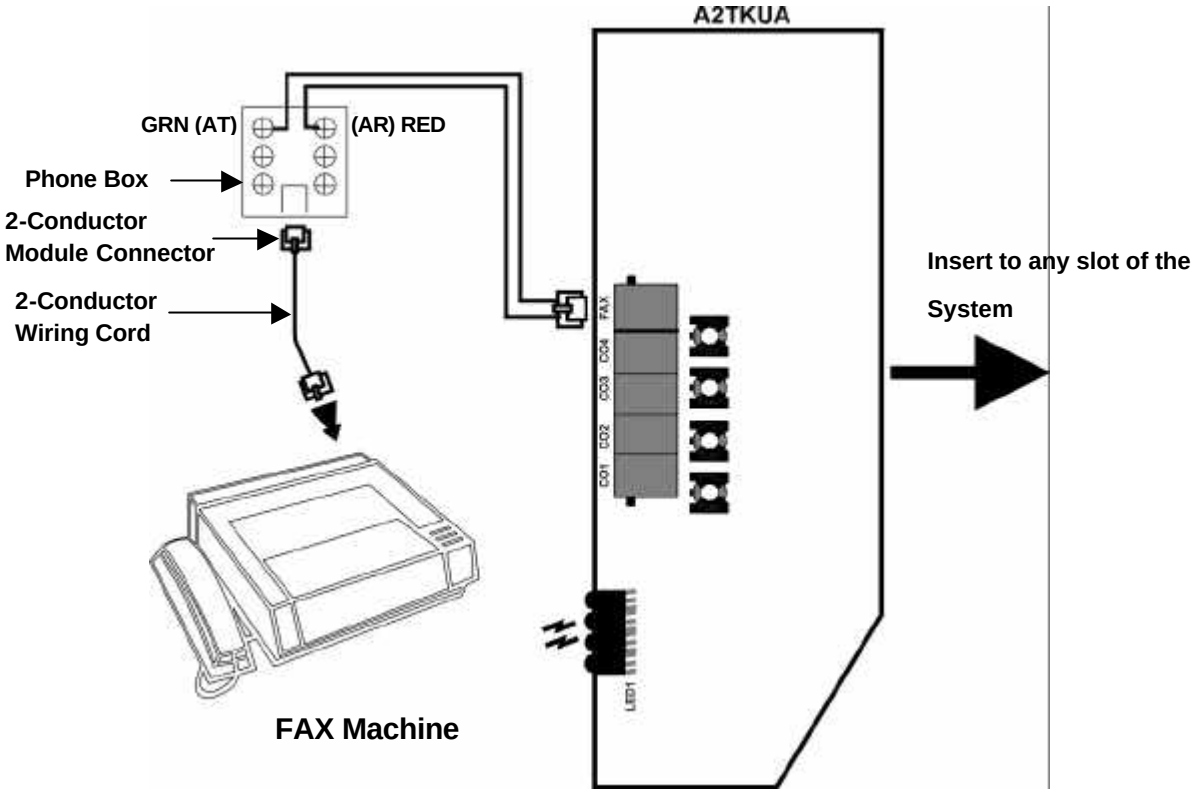


Figure 3.8 FAX Machine Installation Layout

- There is one FAX path in each A2TKUA interface card. The path is controlled by FAX Monitor ability. The FAX path is paralleled with the forth trunk (CO4) in each A2TKUA.
- Using 2-conductor wiring cable to the fifth RJ11 Jack (FAX) on A2TKUA.

10.3 Key Telephone Installation

10.3.1 General key Station Installation

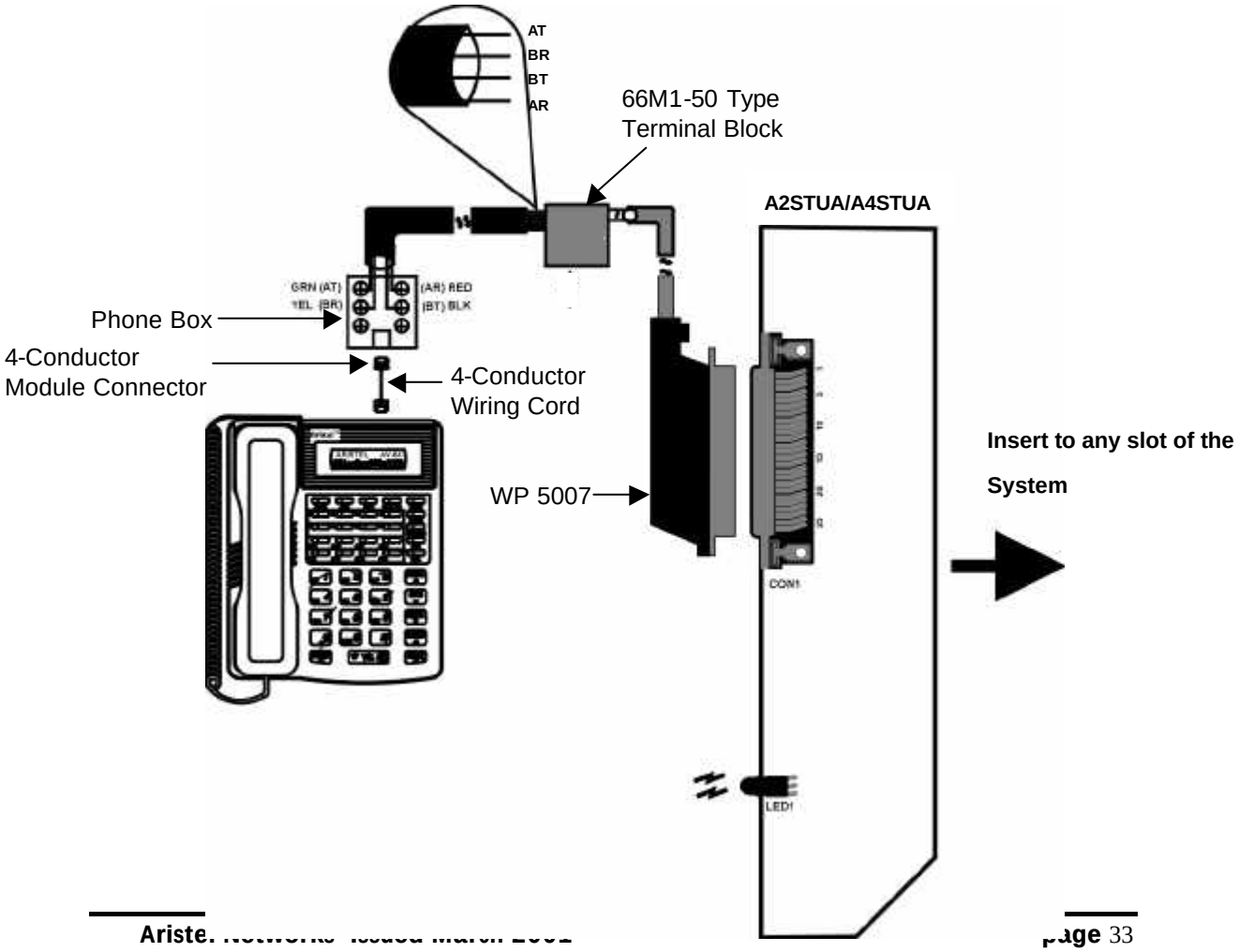


Figure 3.9 General Key Station Installation Layout

10.3.2 OHC

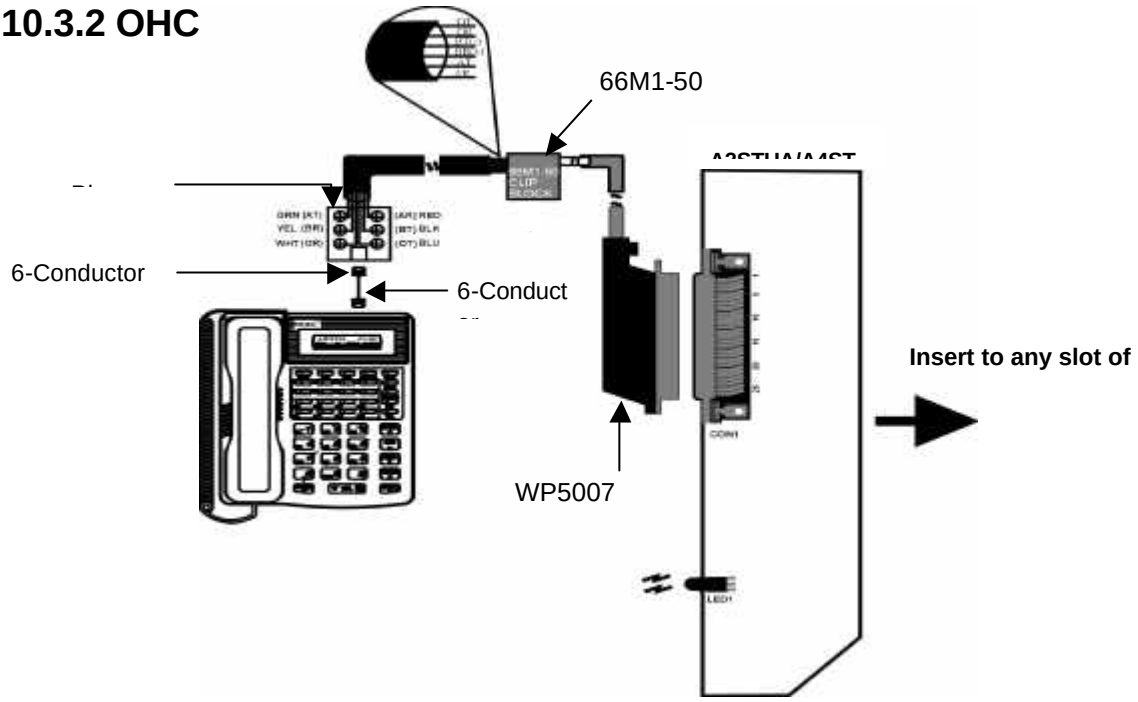
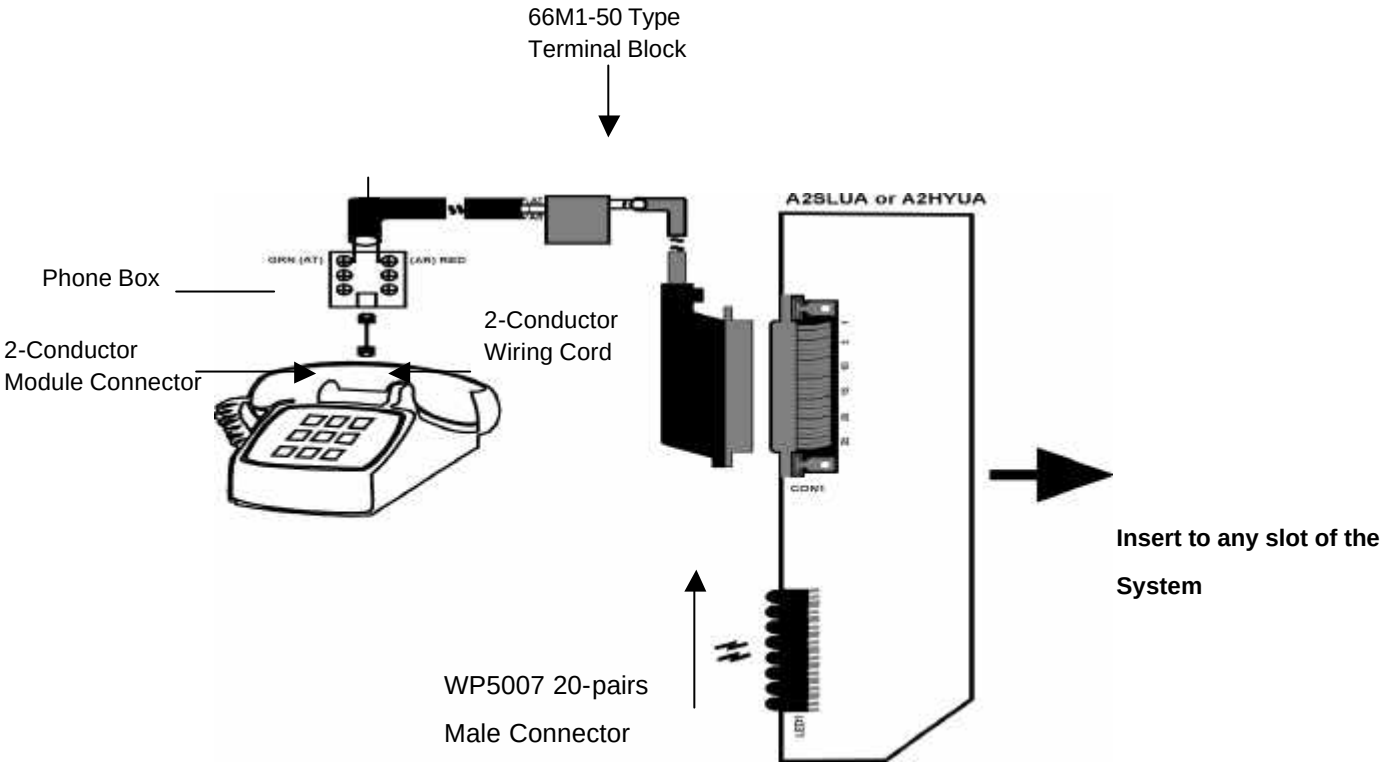


Figure 1.18 OHCA Key Station Installation Layout

- The Key Telephone for OHCA installation must be **KP10D** (LCD+Handsfree) or **KP10SH** (Standard Phone with Handsfree).
- OR/OT: Audio Pair of OHCA, OR = Receiving (White Color), OT = Transmission (Blue Color). **This Audio pair is and must be come from "AT8" and "AR8" which is for the eight (8th) Key Station.**

10.3.3 Single Line Telephone Installation



10.4 Door Phone Installation

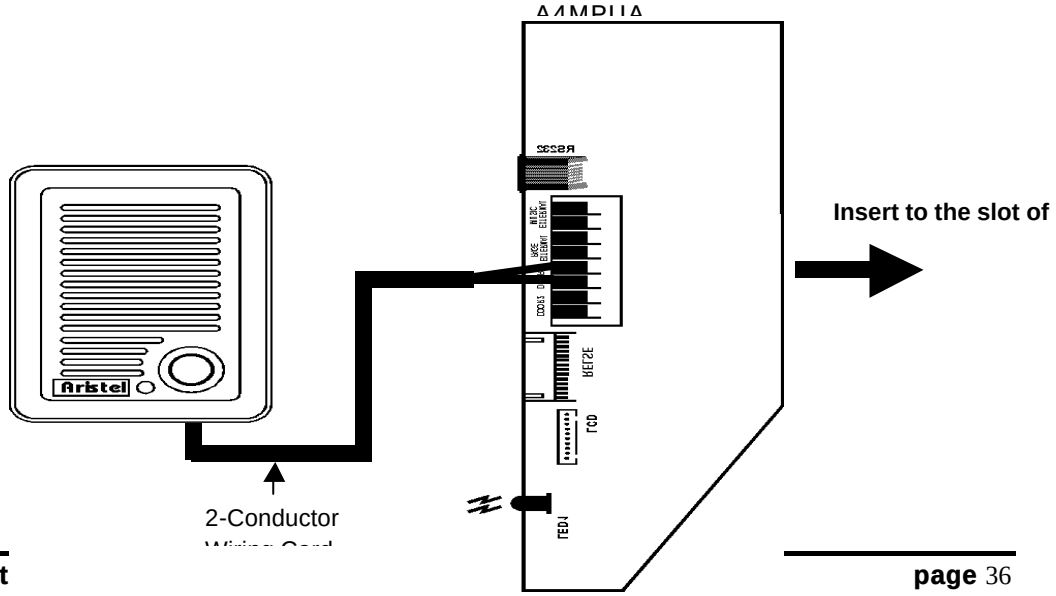


Figure 1.20 Door Phone Installation Layout

10.5 External Music Source Installation

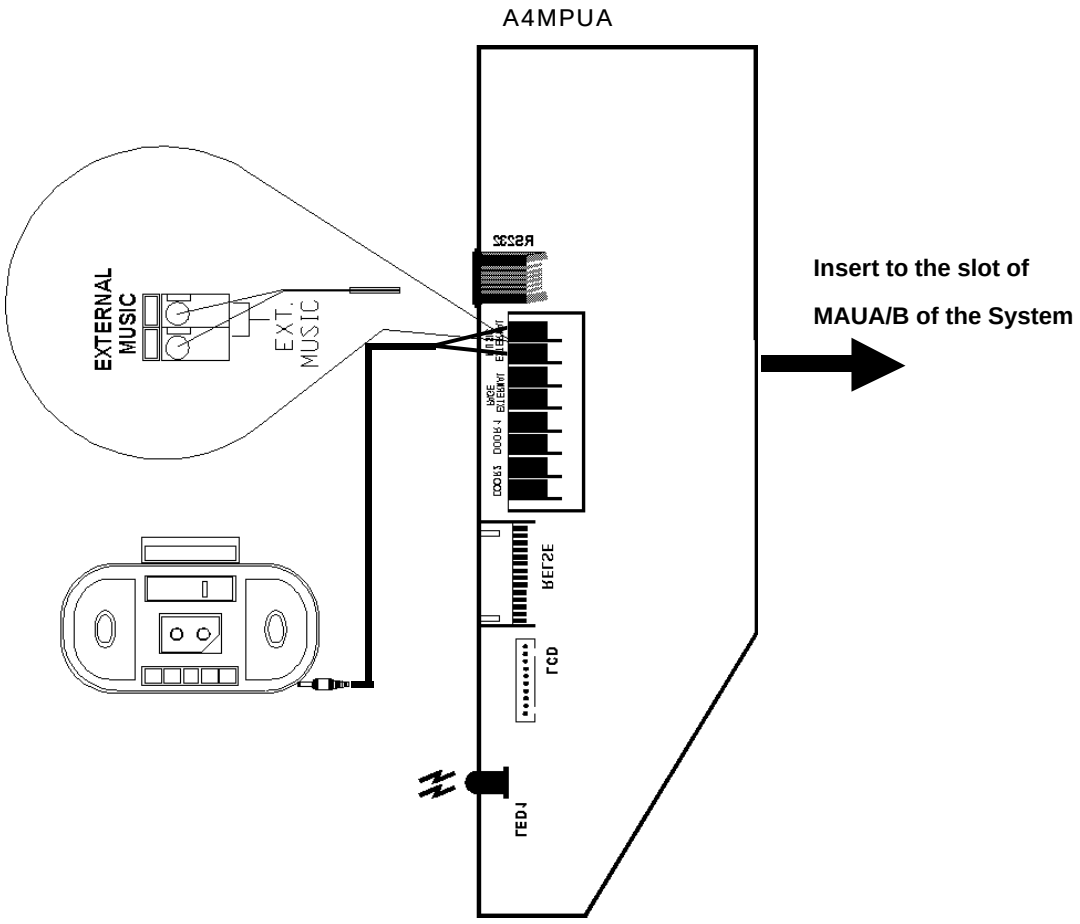


Figure 1.21 External Music Source Installation

- There is only one External Music Interface in the system.
- Connect 2-conductor wiring cord from External Music Source to "**EXTERNAL MUSIC**" on **A4MPUA**. Please refer to **Figure 4.3**.
- After External Music Source has been installed, it is necessary to select the external melody is for **Background Music** or **Music On Hold** by Jumper Selection on **A4MPUA**.

10.6 External Paging Equipment Installation

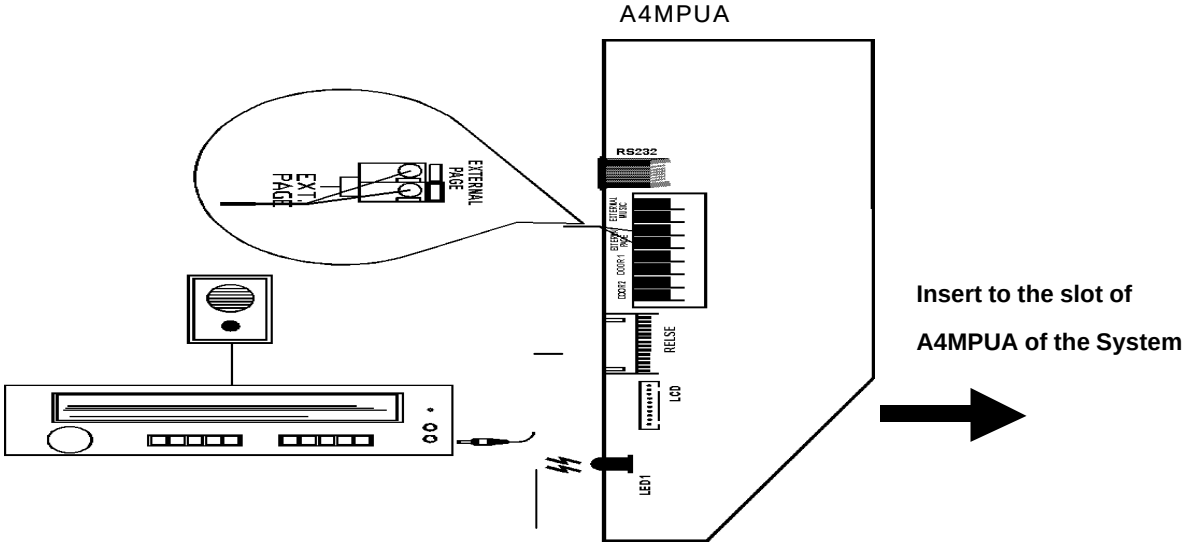


Figure 1.22 External Paging Equipment Installation Layout

- There is only one External Paging Interface existed in the system.
- External Paging Equipment Installation must be cooperated with Relay Interface on **A2MFCA**.
- Connect 2-conductor wiring cord from External Paging Equipment to "**External Page**" connector on **A4MPUA**. Please refer to **Figure 4.4**.

10.7 Multifunction Card Installation

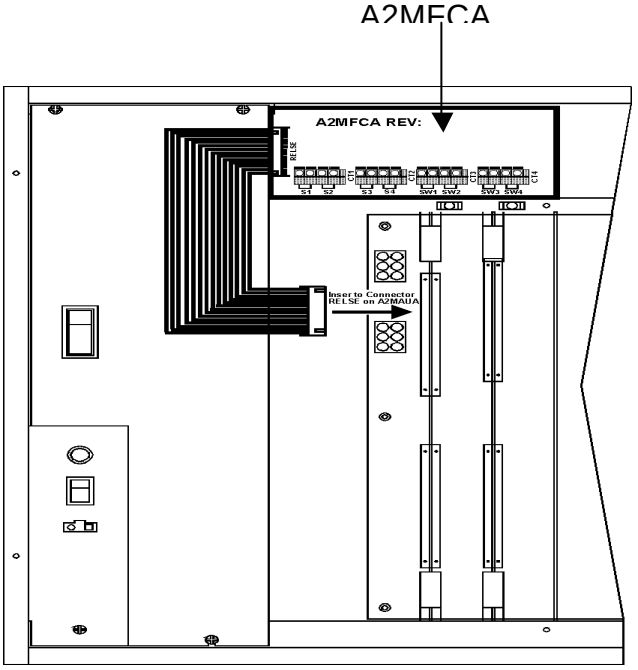


Figure 1.23 A2MFCA Installation Layout

10.8 RS232 Installation

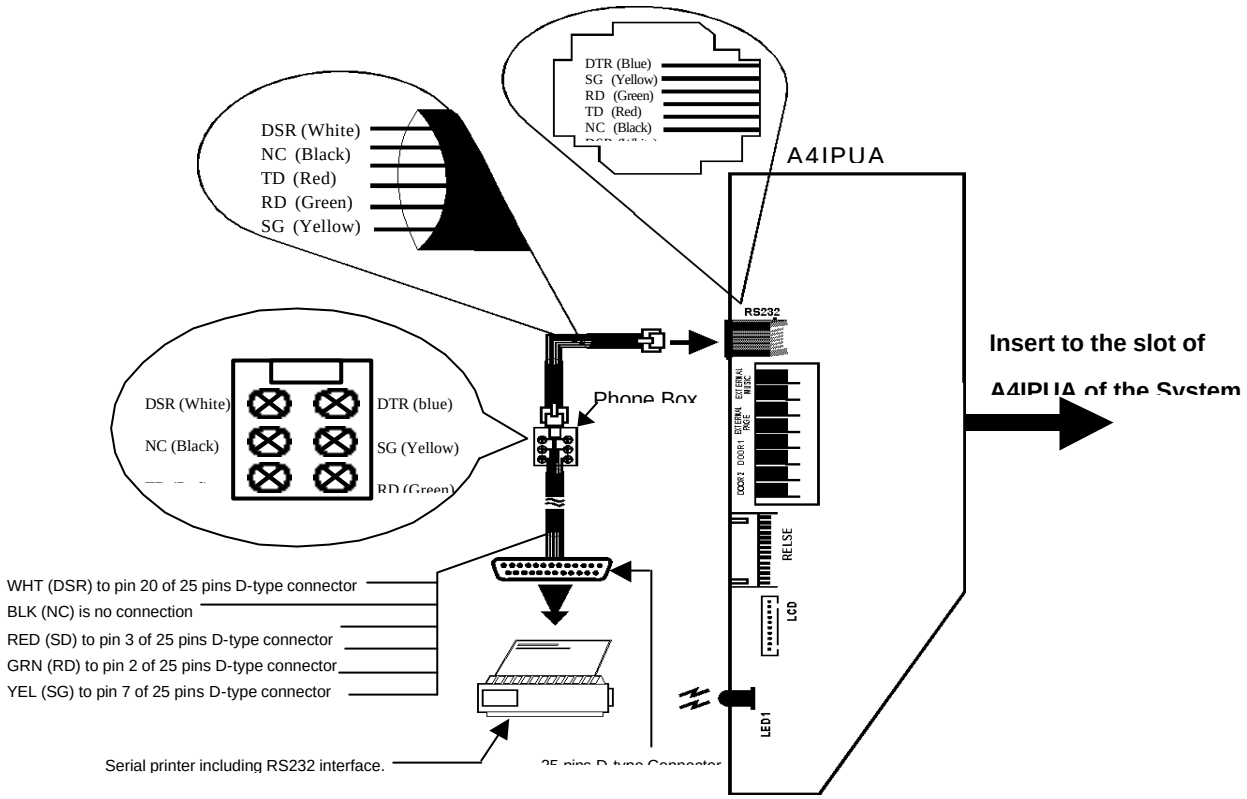


Figure 1.24 RS232 Installation Layout

- Use 6-Conductor Wiring Cord to be connected between 6-Conductor Modular Connector and D-type Connector according to Figure 4.6.
- Connect 6-Conductor Modular Connector with 6-Conductor Wiring Cord to RS232 port on A4IPUA; and connect D-type Connector to Serial Printer With RS232 Interface as in Figure 4.6.