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SPECIFICATIONS ARE SUBJECT TO CHANGES WITHOUT NOTICE**General Description :**

Thanks for choosing the **Aristel AV-20** key telephone system. The **Aristel AV-20** possesses the latest technology and is configured with a minimum of 2 co lines & 8 hybrid stations, expandable to a maximum of 4 co lines & 16 hybrid stations. All extension ports are designed as hybrids and can connect directly either a key phone or SLT according to your requirements. The key telephone can display caller ID function for incoming call follow up. In addition, the **Aristel AV-20** is equipped with complete peripherals, such as RS-232 for data output, door phone, multi-function sensor, multi-function relay, external music sources, external paging, voice auto-attendant and so forth.

This installation manual gives clear descriptions of all the steps for installation. This manual will assist you to accomplish the installation successfully to achieve the telecommunication service & management of the highest quality. If you have any queries, please contact your Aristel authorized agent for help.

1 System's Specification

1.1 CPU & Control

- **CPU** : Intel 80188/16bit.
- **System Control** : **Stored Program Control**
- **Switch Control** : **Space Division Matrix**

1.2 Hardware Configuration

- System Capacity : 208 ~ 416
- Aristel special "A-SERIES_{6A}" ASIC IC
- **SMT** interface agglutinate technology
- Stationary tank installation, host, CO/station lines & other peripherals are independent one another
- Built-in Voice Auto Attendant (optional)
- CO/station lines connected by RJ-11, and other connections by quick connectors

1.3 System Software

- Default : ROM
- Operate : RAM
- Software Protection : Watch Dog
- Power Failure : Build-in Li-Battery
- Call Split Protection : Link Maintain.
- Extension Error Action Protection : Auto Release

1.4 Safety Conformation

- Line Short Circuit Protection: Electronic protection Interface
- POWER Noise Restraint
- Lightning Protection
- Durable key pad 1,000,000 press cycles minimum
- Aristel special "ASIC IC" with high reliability

2 System's Specification & Function

2.1 System's Specification

All accessories and expansion boards are designed to be fitted inside the main KSU. No external mounting is required.

Aristel AV-20		Basic Capacity	Expansion Capacity	Maximum Capacity
Co Line		2	2	4
Extension	Key Phone	8/0	8/0	16/0
	SLT	0/8	0/8	0/16
Door Phone		0	2	2
Relay Switches		0	2	2
Sensor Interfaces		0	2	2
Fax Monitor		0	1	1
Auto Attendant		0	1/2	1/2
RS232 for SMDR		0	1	1
UPS Interface		0	1	1
Speed Dial		1000	0	1000
Power Failure Transfer Phone (PFT)		2	2	4

Table 2-1 table System Specifications

2.2 Electrical & Other Specifications

This table shows the system's electrical & other specifications.

AV-series		AV-20			
Input AC Voltage		AC220V (±15%) 50/60hz×1.1A/0.65A			
Power Consumption		System	30W	SLT	0.85W
		Key Telephone	1~2W	Door Phone	0.5W
System Power Back-up Battery 7AH		3~4 hours			
Dialing Signal	Outgoing Dialing	Tone / Pulse			
	Intercom Dialing	Tone / Pulse / Digital			
Loop Resistance	Co Line	Maximum : 1.5KΩ			
	Key Telephone	Maximum : 40Ω			
	SLT	Maximum : 400Ω			
	Door Phone	Maximum : 40Ω			
	External Paging	Maximum : 800Ω			
Wiring Installation		Co Line	2 wires	External Music Source	2 wires
		Key Phone	4 wires	Relay	2 wires
		SLT	2 wires	Sensor	2 wires
		Door Phone	2 wires	Fax	2 wires
		External Paging	2 wires	SMDR	D-TYPE 9 pins
Relay	Type	SPDT (just 1 set is enough)			

	Power Capacity	Maximum : 120V×7A
	Function	Supported by system software : Door Lock、 External Paging、 Account Code、 Adjustable Ringing Volume...
System Dimension(mm)		406×334×88 mm
Key Phone Dimension (mm)		200×180×75 mm
Working Temperature		0°C~45°C
Working Humidity		10%~90% (non-condensing)
Switch Mode		SDM (Space Division Matrix)
Control Mode		Stored Program Control (SPC)

Table 2-2 Electric standard for System

* These specifications were made in 2003 and are subject to the change without notice.

*The products' specification list is subject to market changes and the actual specification should be checked at the time of installation.

2.3 Key Phone System Specification

◆ AV-20 Series

Function	KP10X	KP10XLB	KP10S	KP10LB
DSS Key	15 Keys	15 Keys	25 Keys	25 Keys
LCD (16 x 2)	...	Big LCD	...	Big LCD
Handsfree Dialing	✓	✓	✓	✓
Direct Intercom	✓	✓	✓	✓
Photo Switch	✓	✓	✓	✓
Dual Color LED (BLF)	8 Keys	8 Keys	25 Keys	25 Keys
Digital Volume Control	8 levels	8 levels	8 levels	8 levels
Short Circuit Protection	✓	✓	✓	✓
OHCA	Add HFBA	Add HFBA	Add HFBA	Add HFBA
Handsfree Conversation	Add HFBA	Add HFBA	Add HFBA	Add HFBA
One-touch Paging	✓	✓	✓	✓
Last Number Redial	✓	✓	✓	✓
Built-In Calculator	✓
Dual-Color Tri-Status LED	8 Key	8 Key	25 Key	25 Key
Individual Speed Dial	20 sets	20 sets	20 sets	20 sets
Different Ringing Frequencies	9 Kinds	9 Kinds	9 Kinds	9 Kinds

Table 2-3 Key Phone Specification

*These specifications were made in 2003 and are subject to change without notice.

*The products' specification list is subject to market changes, and the actual specification should be checked at the time of installation.

2.4 System Modules

- ◆ AV-20 Series

Model	Item #	Description	Remark
AV-20 Main Service Unit	A8-208H	Basic Capacity : 2 co lines & 8 exts	Standard
AV-20 Power Unit	A8PWUA	special power unit for AV-20	Spare Card
AV-20 Un-interruptible power supply Unit	A8UPSA	Battery charger + SLT Ring generator	Expansion Card
AV-20 Mother Board Unit	A8MBUA	2co lines & 8 hybrid extension interfaces	Spare Card
AV-20expansion Card	A8EPUA	2 co lines + 8 hybrid extension interface	Expansion Card
AV-20 Voice Service Card	A8VSCA	1 voice channel (60 seconds)	Optional Card
AV-20 Caller ID Card	A8CIDA	supports FSK & DTMF, 1 channel per card	Optional Card
AV-20 Voice Service Card	A6VSCA	2 voice channel (60 seconds)	Optional Card
AV-20 RS-232 Card	A6RSCA	SMDR, Serial Port	Optional Card
AV-20 Multi-function Card	A6MFCA	2 door phones + 2 relays + 2 sensors	Optional Card
KP Series Telephone	KP...	All series of AV telephone are applicable	Optional Card

Table 2-4 System's Accessories

*These specifications were valid in 2003 and are subject to change without notice.

*The products' specification list is subject to market changes, and the actual specification should be checked at the time of installation.

2.5 System Features' List

System ringing/system time setting
Telephone Exchange Voluntarily Setting
♦ Auto Attendant
Internal & External Background Music
Trunk Auto-hunting
Last Number Auto-redialing
Internal / External On hold music/ background music
Call Forwarding (no answer/busy)
Conversation Time Control
Call Pick Up
Toll Restriction
Dialing pause time setting
Busy remind
Intercom Hybrid Coding
Night service
♦ Dialing Signal Confirm
Conversation Listening
Notice for Busy SLT
♦ Direct Inward System Access (DISA)
♦ Door Lock Supervision / Door switch
Conversation Break-Off Maintenance
System Data Resetting / Programs Index
Hold / Absolute Hold
Fax Monitor
Flash time setting
Internal / External Line Ringing Setting (9 different ringing frequencies)
♦ Fire Alarm / Break-Off Alarm
External ringing start-up Background Music
Short-Circuit Protection Device
Connect to another PBX setting
Account Code
Internal/External paging, Internal/External paging in group
Data Supervision
♦ Auto ask-for-help
Message-leaving / Barge in/monitor

Hot Line Setting
Trunk queuing/Automatic Recall
Call Forwarding Follow Me
Night Directed Transfer
Multi-function Relay / Multi-function Sensor Control
Programming in conversation
System Cipher Setting / Online Computer Program
Power-off SLT /Fulfilling SLT's Multi-function
Tone / Pulse
SLT Message Setting
Telephone Directed /Selected / Auto Transfer
Clear of on hold SLT
Direct Dialing for Intercom
System Speed Dial / Personal Speed Dial Group
♦ Station Message Details Report (SMDR)
♦ Door Pone Setting
♦ System Data Printing
Message information Setting
Manual / Auto Service Optional
Remote Maintenance
Internal / External Directly Dial / Function Setting
Lightning Protection
♦ Caller ID for SLT
Conferencing
Hold / Absolute Hold Recall
Auto-redial

♦ indicates optional function

2.6 Key Phone Station Features List

Digital Volume Control(8 Levels)
9 Different Ringing Frequencies
Message for Any Extension
Any Extension Program Setting
Extension Message Answers
Intercom Auto Answer
Auto-hunting
Extension Speed Dial
DSS Console
Call Forward/ Call Follow me
♦ Door Phone Call
Internal Dialing
Busy Hold
Day / Night Service
Extension Directly Transfer Function
Station to Attendants Dialing
Do Not Disturb / Conferencing selected
♦ Door Switch Control
♦ Door Phone Answers
External Line Flash
Hands Free Dialing
System Supervision
Conferencing
Off Hook Call Announcement
External Number Display
Pick-up / Answering Paging
Left-Leaning water-leading speaker port
Rotary Wall Mount Hook
Locks for Extension
Personal Speed Dial Setting
Auto-Release
Build-in Wall Mount Hook
Call pick-up
Background Music Start-up
Auto Pick-up for Busy Line
Group Paging

Different Ringing for Internal / External Calls

- ◆ Hands Free Speaker
- ◆ Off Hook Call Announcement

Internal Line Auto-hunting

Special Line Setting

Auto-redial

- ◆ Surroundings Listening
- ◆ Baby-Listening

One-touch Function Operations

Built-In Calculator Function (25 Buttons LCD Phone only)

Dual Color Tri Status LED

Account Code

One-Touch Extension Dialing

Folded LCD Display

Conversation Listening

One-touch Paging

Pick-up Auto Answering

Ray Shut-Off Control

◆ indicates optional function

3 Preparation & Notes for the System Installation

3.1 Preparation for System Installation

- ◆ Please carefully check the system capacity & the quantity of suitable phones
- ◆ Please carefully check the wires & instrument for installation
- ◆ Please carefully read this manual before installation. The sequence of installation must follow this manual.

3.2 Special Demand for Installation Environment

- ◆ Input AC Voltage : AC220V±15% automatically change
- ◆ Back-up Battery : Built-in charger, for power fail DC24V battery.
- ◆ Wiring Requirements
 - Co Line : 2 wires
 - Key Phone : 4 wires
 - SLT : 2 wires
 - Door Phone : 2 wires
 - Relay / Sensor : 2 wires
 - External Music Source / External Paging : 2 wires

3.3 Equipment Remarks

- ◆ Wiring Requirement : Please carefully check the wiring.
- ◆ The system should be installed in a clean, dry and secure location, 10 centimeters above the ground, to avoid vibration.
- ◆ The location must have adequate ventilation and a temperature range between 0 ~ 45° C with a 10 ~ 90% non-condensing relative humidity.
- ◆ The installation site should have sufficient room to mount the KSU along with the necessary connecting blocks and ancillary equipment on a wall. The installation site should not be in areas subject to static electricity (e.g. Dry copiers), or vibration (e.g. Heavy machinery).

- ◆ This system must have an independent power point. The power point should not be shared with other power-consumption equipment, esp. huge power-consumption machine that should be controlled directly by main switch. In addition, the location must be far away from high frequency & other electrical noise to avoid the interference from radiation 『EMI』 .
- ◆ The power must use three- aperture socket (with earthing-wire.)
- ◆ Please carefully install the lightning-protection equipment to guarantee the system's stability.
- ◆ UTP wires are to be used for co line & station line to avoid noise.
- ◆ SLT wiring must be away from some other disturbance (e.g. : radio wave) Or a separate earth may be required in addition to the third earth wire on the AC circuit.

4 AV-20 PCB & Cabinet Layout

4.1 System Inter-circuit Layout

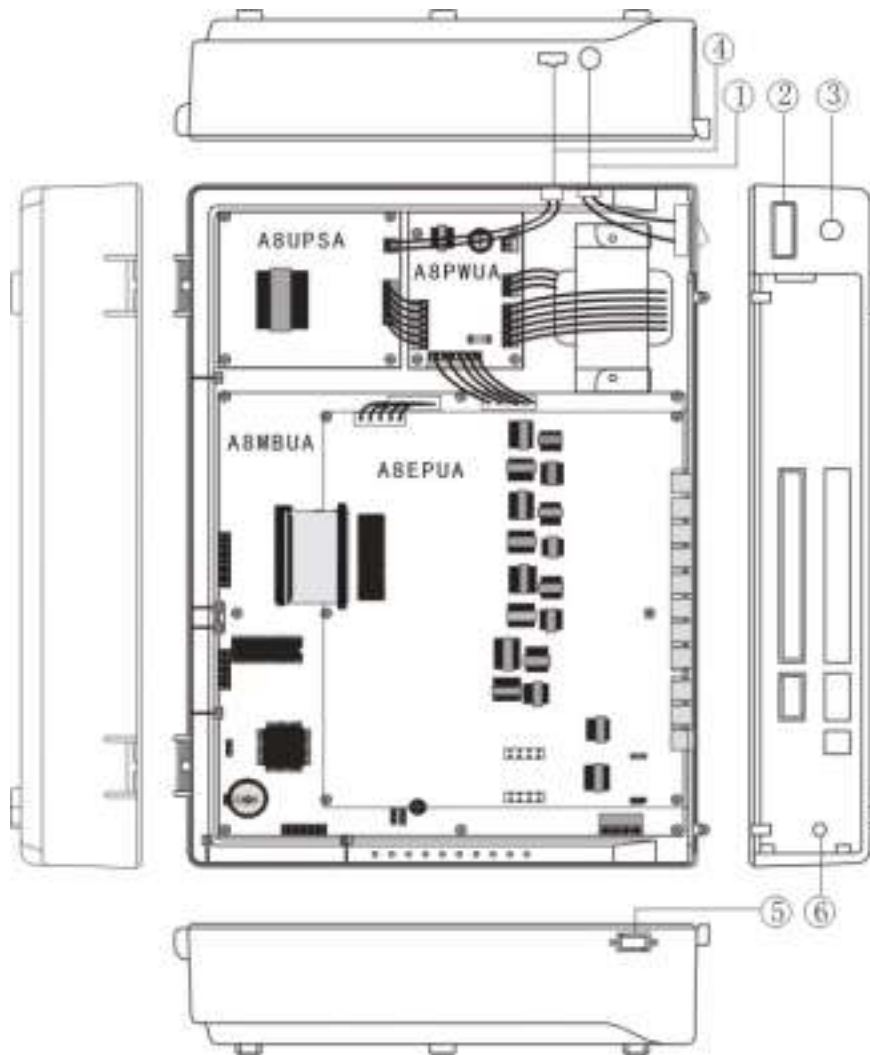


Chart 4-1 Inter-circuit Layout

◆ **Description:**

- 1 : AC power inlet
- 2 : AC power switch
- 3 : Fuse
- 4 : Charge connector for Power-fail
- 5 : RS-232 connector (D-TYPE 9PIN connector)
- 6 : Port for multi-function card

4.2 A8PWUA (Power Board Unit)

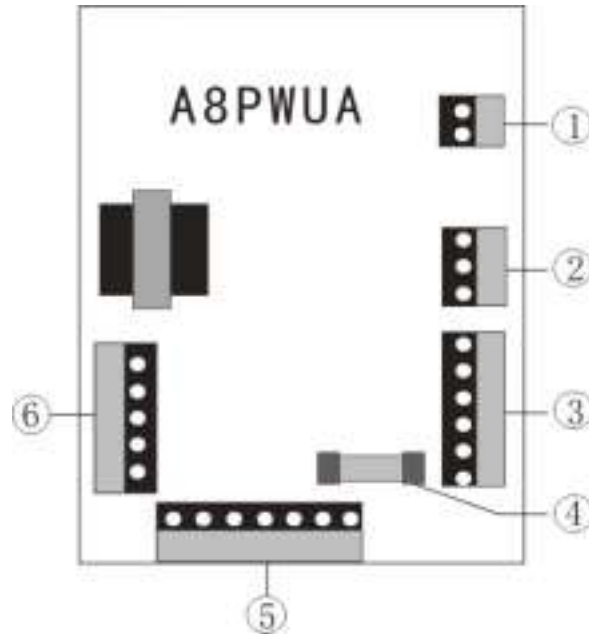


Chart 4-2 A8PWUA (Power Unit)

◆ **Description:**

- 1、 **ACIN** : AC power inlet
- 2、 **TIN** : Transformer Inlet
- 3、 **TOUT** : Transformer Outlet
- 4、 **F1** : Fuse
- 5、 **PWR1** : connect to A8MBUA。
- 6、 **UPS** : connect to A8UPSA。

Note : This board suits for the voltage, **AC220V (±15%) 50/60Hz×1.1A/0.65A.**

4.3 A8UPSA (Power Failure Unit)

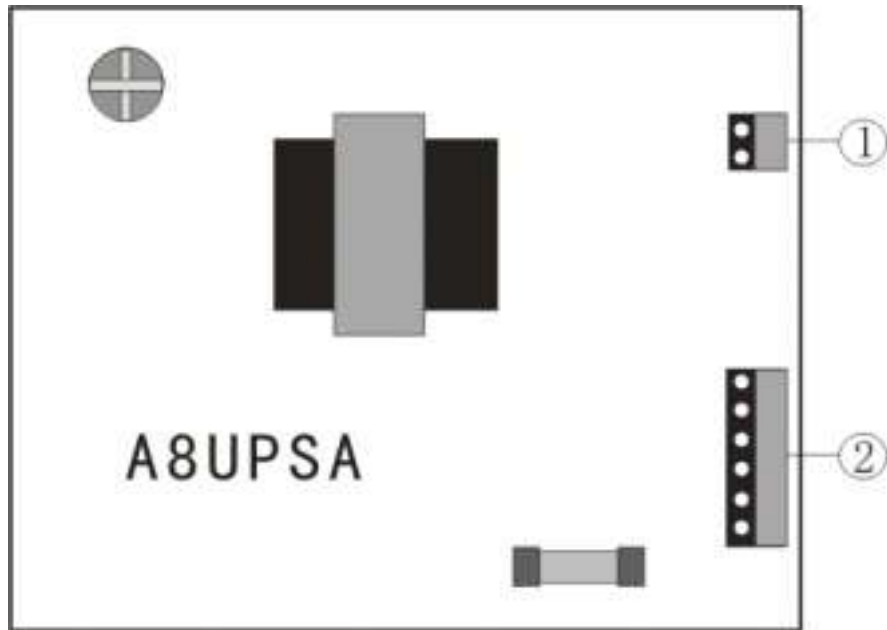


Chart 4-3 A8UPSA (Un-interrupt power supply Unit)

◆ **Description:**

- 1、 **BAT** : Charge input
- 2、 **UPS** : connect to A8PWUA

4.4 A8MBUA (Mother Board Unit)

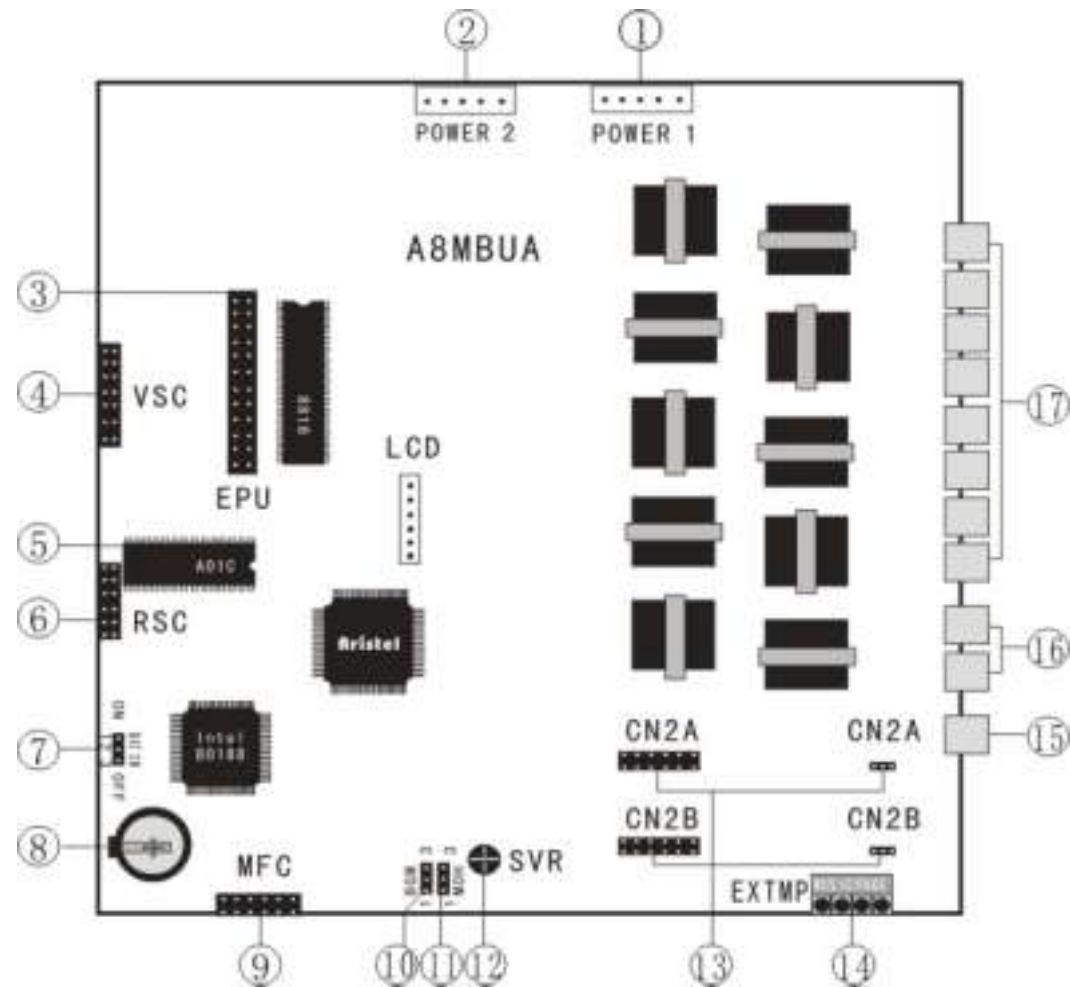


Chart 4-4 A8MBUA (Mother Board Unit)

◆ **Description:**

- 1、 **PWR1** : connect to A8PWUA
- 2、 **PWR2** : connect to A8EPUA
- 3、 **EPU** : connect to A8EPUA
- 4、 **VSC** : connect to A8VSCA
- 5、 **U15** : system program IC

- 6、 **RSC** : connect to RS-232 card (A6RSCA)
- 7、 **SW** : System software protection switch (Li-battery)



Chart 4-5 Switch for start-up Program Protection Battery

- SW:1&2 short circuit** : switch on the program protection battery, avoiding program lost when power fail.
- SW:2&3 short circuit** : When your system needs to be left unused for a long time, switch off the program protection battery.
- 8、 **BAT**: Battery socket for program protection (Li-battery, 3VDC, 180mA/H)
- 9、 **MFC** : connect to A6MFCA
- 10、 **BGM** : Switch for background music (1 & 2 for internal, 2&3 for external)
- 11、 **MOH** : Switch for holding music (1&2 Internal music source / 2&3 External music source)
- 12、 **VR** : Volume control for background music volume adjustment
- 13、 **CN2A, CN2B** : connect to Caller ID
- 14、 **EXTMP** :connect to external music source (2PIN) & external paging (2PIN)
- 15、 **FAX** : Fax input
- 16、 **CO1~CO2** : co line port. The one next to the fax machine input is CO1.
- 17、 **ST1~ST8** : station port (RJ11)。 The station ports are clearly labeled.

4.5 A8EPUA Hybrid Station Unit

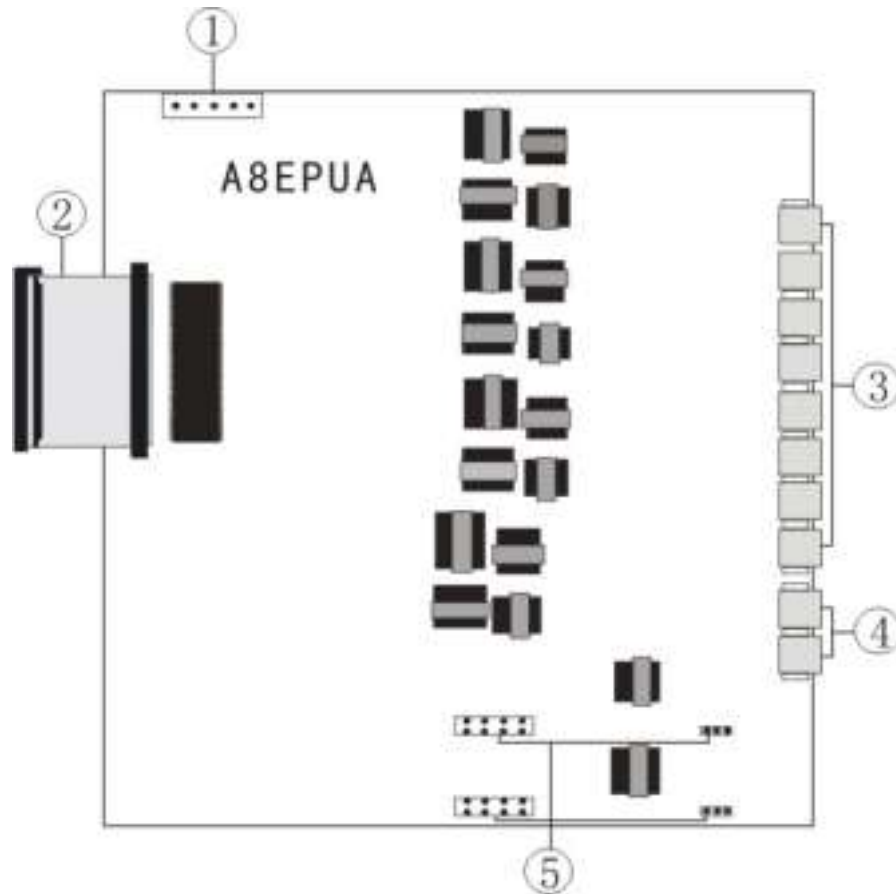


Chart 4-6 Expansion Unit (A8EPUA)

◆ **Description:**

- 1、 **R2** : connect to A8MBUA。
- 2、 **EPU** : connect to Mother Board Unit
- 3、 **ST9~ST16** : station port
- 4、 **CO3~CO4** : co line port
- 5、 connect to Caller ID

4.6 A8VSCA (Voice Service Card)

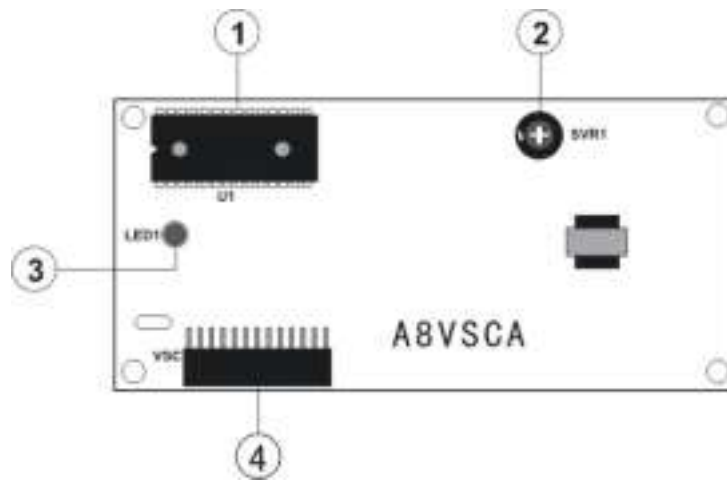


Chart 4-7 Voice Service Card (A86VSCA)

◆ **Description:**

- 1、 **U1** : 60 Seconds Voice Chip (Flash Memory) for the 1st Voice Channel.
- 2、 **SVR1** : Variable Resistor. To adjust the Playing Voice Volume for the 1st Voice Channel.
- 3、 **LED1** : LED Indicator. It will be steady **ON** whilst the 1st Voice Channel is Operation.
- 4、 **VSC** : 20PIN connector, connect to 『VSC』 of A8MBUA

4.7 A6RSCA (RS232 Card)

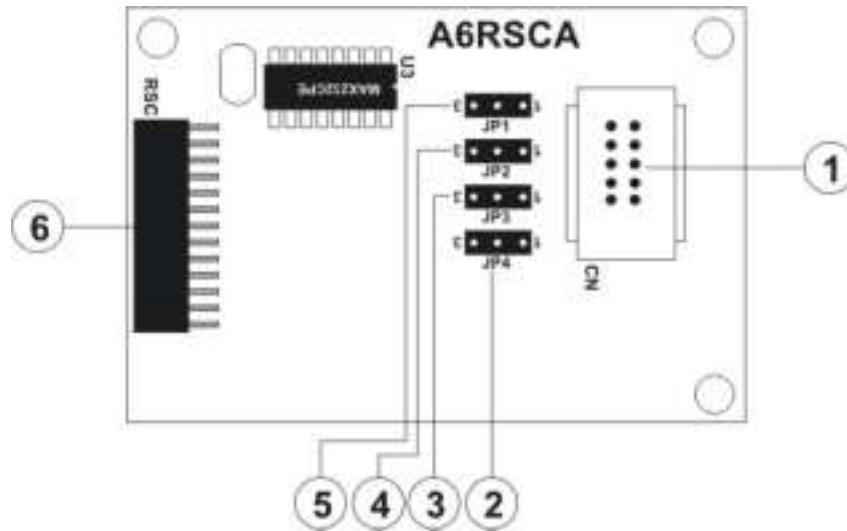
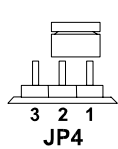


Chart 4-8 A6RSCA (RS232 Card) Layout

◆ Description:

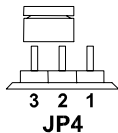
1、 **CN** : 10-Pins Male Wafer Connector. Connect to the position of **Point 9** in **Figure 1** on **Page 14** by the special DB9 Cable [**FD-10-9-400, Male Type**] for the connection of either PC COM Port or Serial Printer.

2、 **JP4** : 3-Pins Jumper Selection



Tx Pin when connect to **PC COM Port**

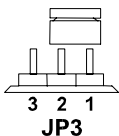
Date Transmit from System to PC (SYS→PC)



Rx Pin when connect to **SERIAL PRINTER**

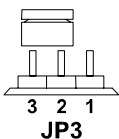
Date Receive from Serial Printer to system (SYS←Serial Printer)

3、 **JP3** : 3-Pins Jumper Selection



Rx Pin when connect to **PC COM Port**

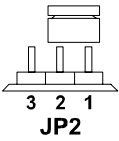
Date Receive from PC to system (SYS←PC)



Tx Pin when connect to **SERIAL PRINTER**

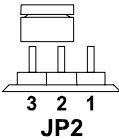
Date Transmit from Serial Printer to system (SYS→Serial Printer)

4、 **JP2** : 3-Pins Jumper Selection



DSR Pin when connect to **PC COM Port**

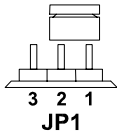
Date Receive from PC to system (SYS←PC)



DTR Pin when connect to **SERIAL PRINTER**

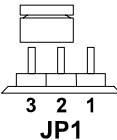
Date Transmit from Serial Printer to system (SYS→Serial Printer)

5、 **JP1** : 3-Pins Jumper Selection



DTR Pin when connect to **PC COM Port**

Date Transmit from System to PC (SYS→PC)



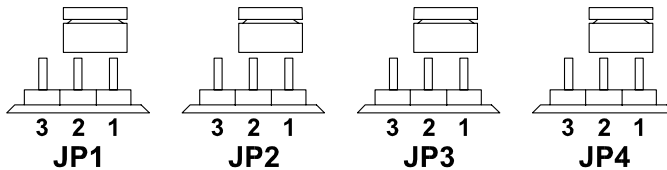
DSR Pin when connect to **SERIAL PRINTER**

Date Receive from Serial Printer to system (SYS←Serial Printer)

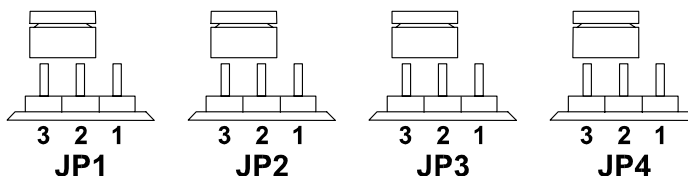
6、 **RSC** : 26PIN connector, connect to 『RSC』 of A8MBUA

Note:

- 1、 If the system's RS232 is connected to PC, please make ALL jumpers to be [PIN1 + PIN2] SHORTED



- 2、 If the system's RS232 is connected to Serial Printer, please make ALL jumpers to be [PIN2 + PIN3] SHORTED.



4.8 A6MFCA (Multi-function Card)

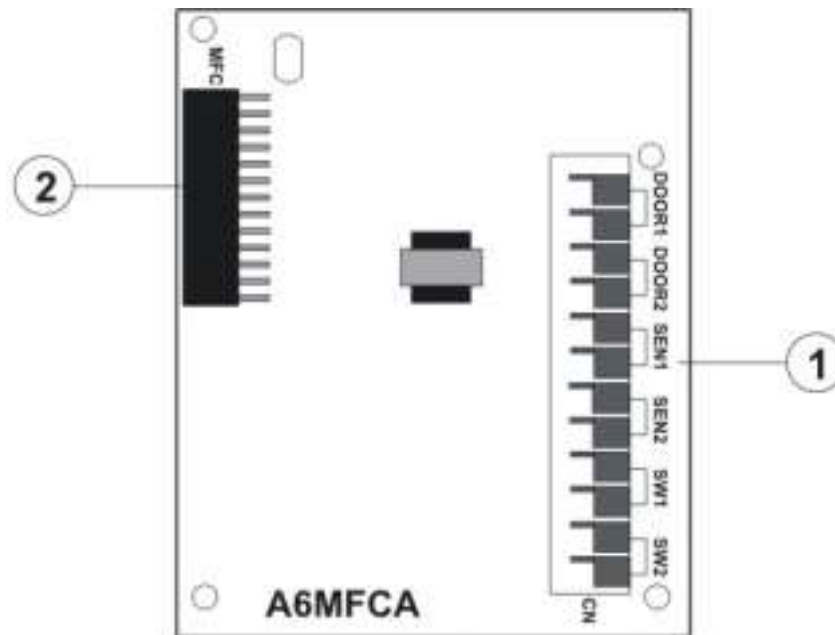


Chart 4-9 A6MFCA (Multi-function card) Layout

◆ **Description:**

1、 **DOOR2** : Build-in quick connector connects with the second door phone.

DOOR1 : Build-in quick connector connects with the first door phone.

SEN2 : Build-in quick connector connects with the second sensor.

SEN1 : Build-in quick connector connects with the first sensor.

SW2 : Build-in quick connector connects with the second relay.

SW1 : Build-in quick connector connects with the first relay.

2、 **MFC** : 26PIN connector connect with MFC of the A8MBUA.

4.9 D1CIDC (Caller ID) Layout

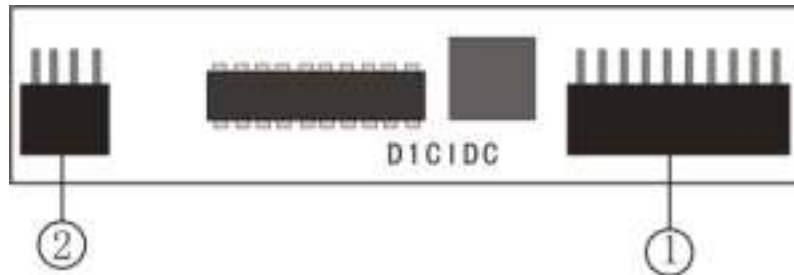


Chart 4-10 D1CIDC (Caller ID) Layout

◆**Description:**

- 1、**CN2** : connect with A8MBUA
- 2、**CN1** : connect with A8MBUA

5 System Wiring & Installation

5.1 AC Power & DC Battery Back-up Installation

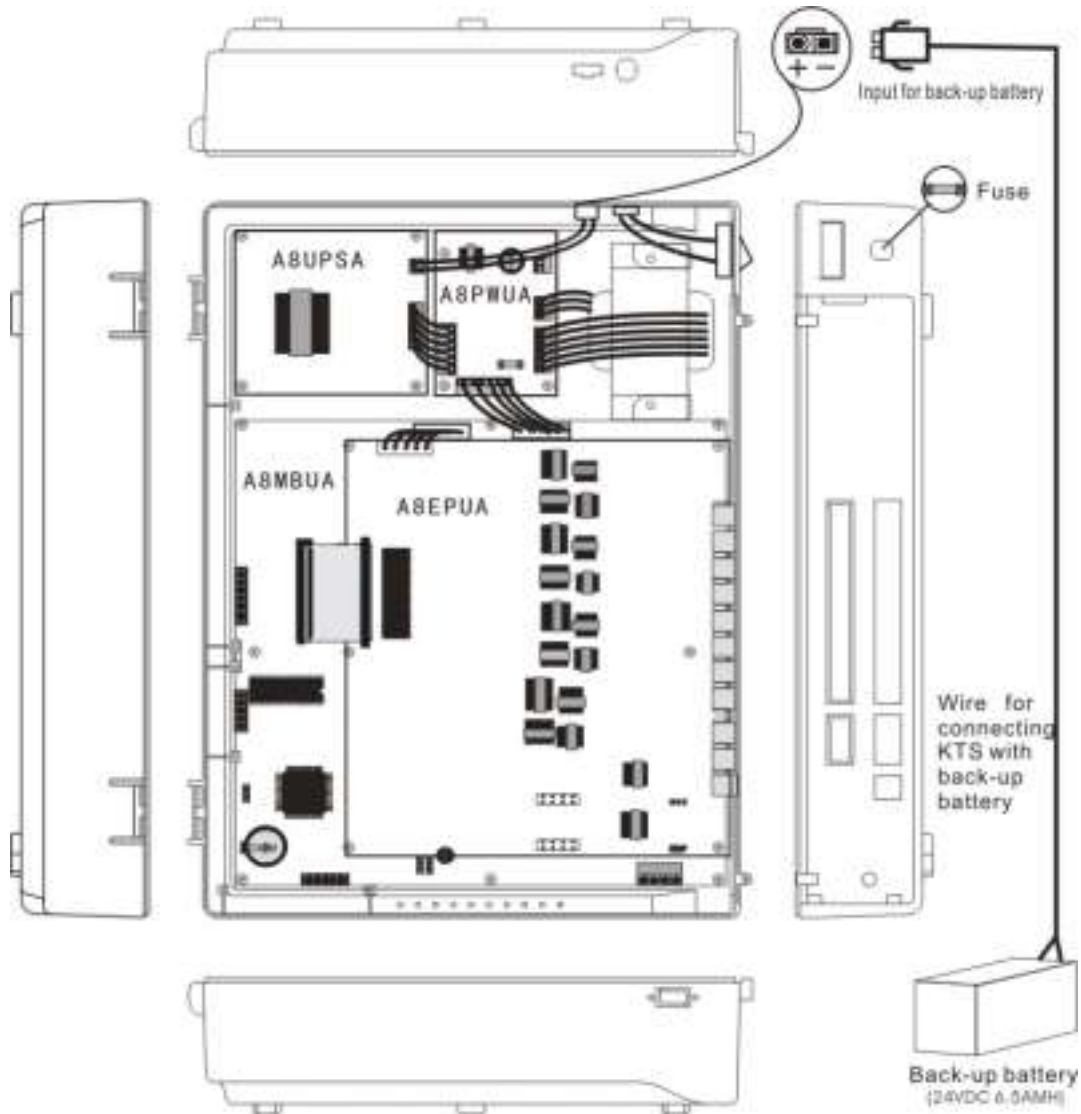


Chart 5-1 AC Power & DC Battery Back-up Installation

◆ **Description:**

- 1、 Input AC Voltage / Input AC Current (Ampere):
AC220V (±15%) 50/60hz×1.1A/0.65A
- 2、 Back-up Battery : 24VDC
- 3、 Power Consumption (Max) : 30W
- 4、 Working Temperature : 0°C~45°C
- 5、 Working Humidity : 10%~90% (not coagulate)

5.2 System Back-up Battery Installation

◆ Description:

- 1、 **SW1** : If 1&2 are short-circuit, it will protect the program while back-up battery works during power-fail.
- 2、 **SW1** : If 2&3 short-circuit, the battery is off.

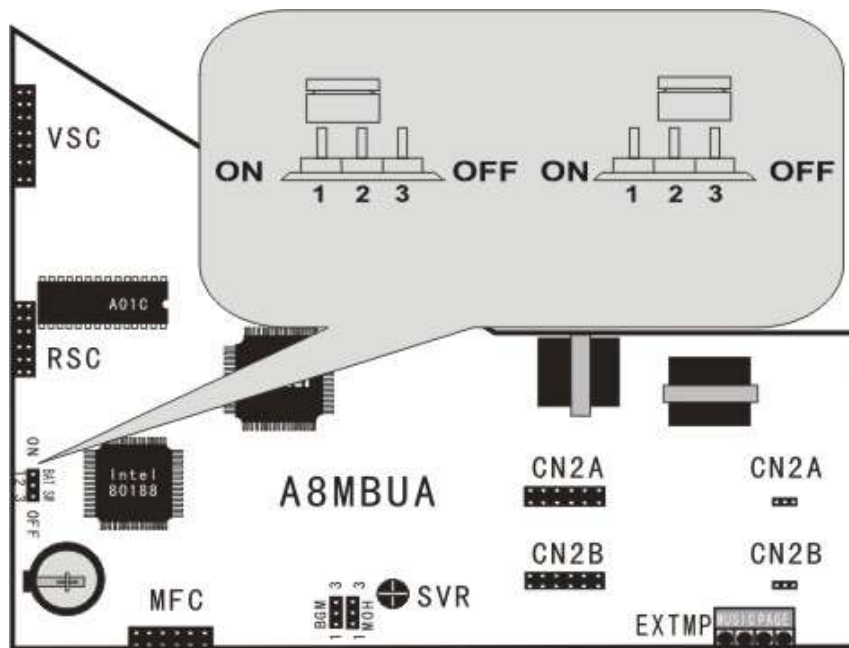


Chart 5-2 Program Protection for Back-up Battery Installation

5.3 Co Line Wiring

This system use 2 Wires for co line, below is the wiring method. The wiring method of A8EPUA is similar to A8MBUA's.

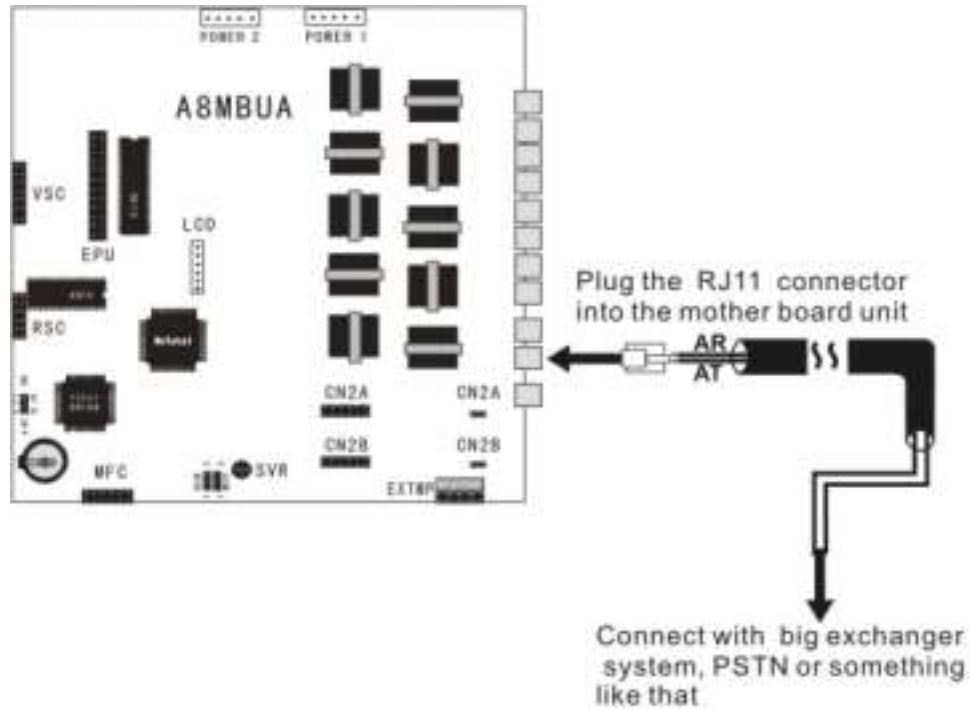


Chart 5-3 Co Line Wiring Layout

5.4 Fax Machine Wiring

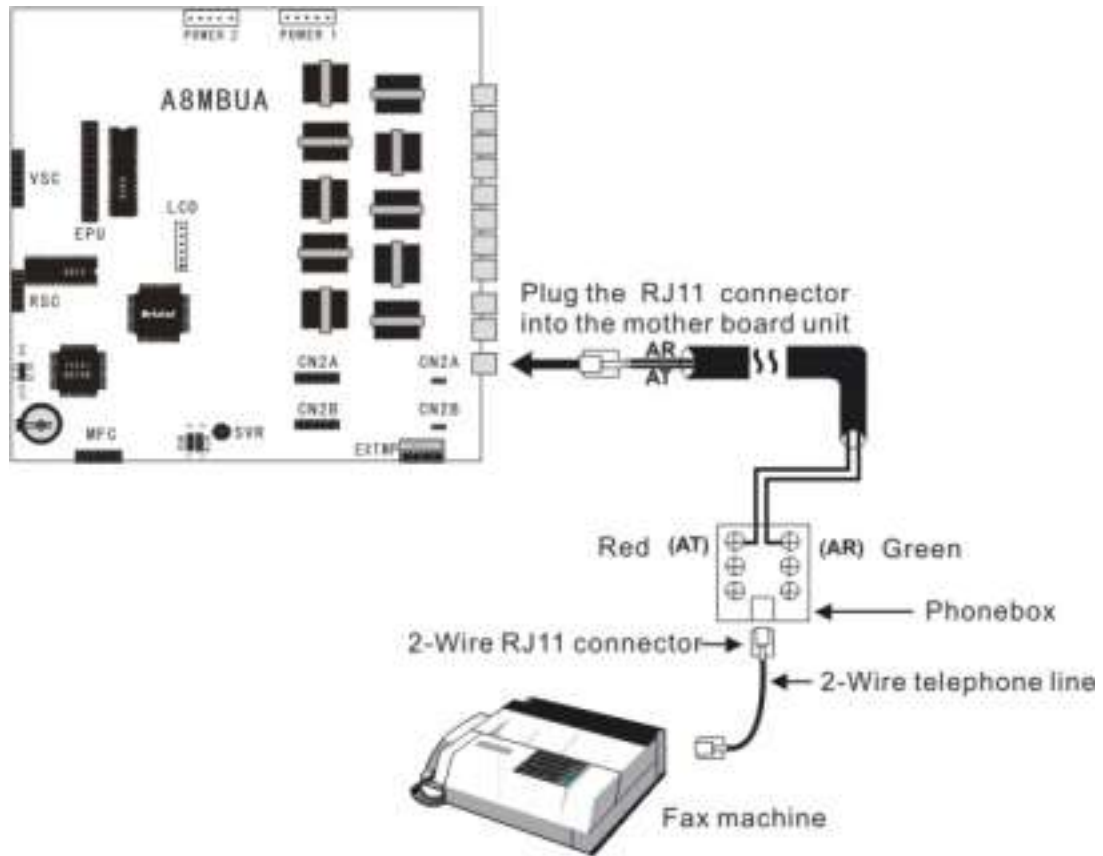


Chart 5-4 The Layout of Fax Machine Installation

◆ Description:

- 1、 Only A8MBUA supplies fax input.
- 2、 The fax input will share with Co.2.
- 3、 Another SLT can utilize this fax special route in case no fax.
- 4、 2 wires for fax machine, as shown at above chart.

Note: Fax machine input is a standard input and can connect with a modem.

5.5 Key Telephone (A8MBUA) Wiring

This system use 4 Wires for key phone station. Below is the wiring method. The wiring method of A8EPUA is similar to A8MBUA's.

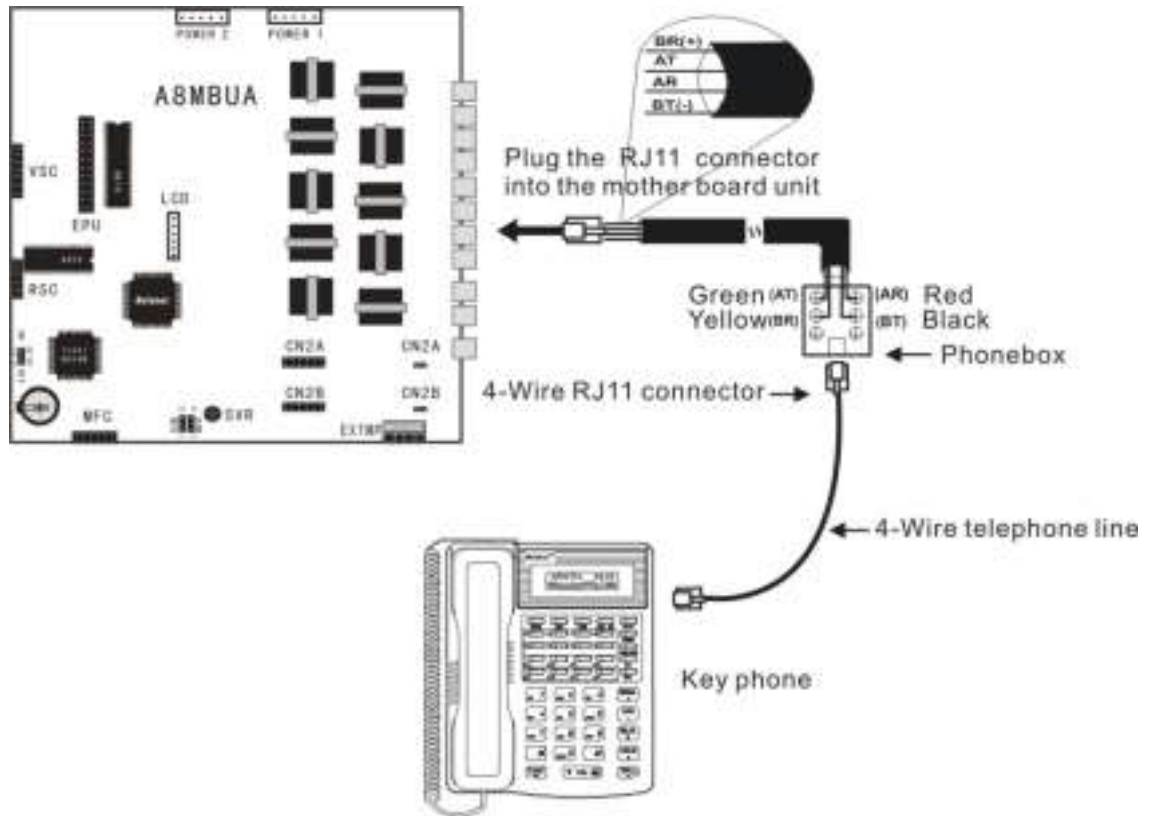


Chart 5-5 Key Telephone Installation

◆ **Description:**

- 1、 This board (A8MBUA) can connect to at most 8 Key Phone Station.
- 2、 **【ST1】 ~ 【ST8】** : Key Phone Station Port.
- 3、 4 Wires for key phone station, as shown at above chart.
- 4、 4-Wire RJ11 connector to be used, from left to right, including BT, AR, AT, BR.
- 5、 AT/AR is the audio pair; AT = Transmission (Green Color), AR =Receiving (Red Color).
- 6、 BT/BR is the Data/Power pair; BT = (-) Pole and Data Receiving (Black Color), BR = (+) Pole and Data Transmission (Yellow Color).

5.6 Single Line Station (A8MBUA) Wiring

This system use 2 Wires for SLT extensions. Below is the wiring method.
The wiring method of A8EPUA is similar to A8MBUA's.

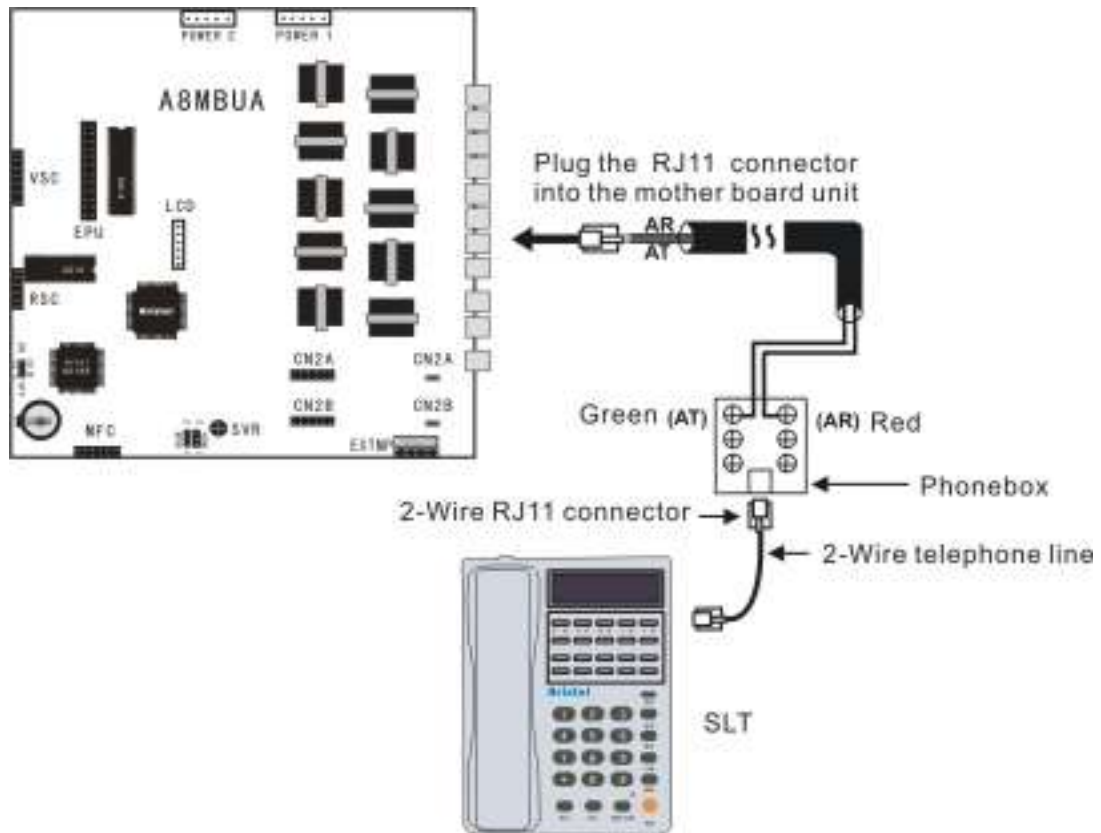


Chart 5-6 SLT Wiring

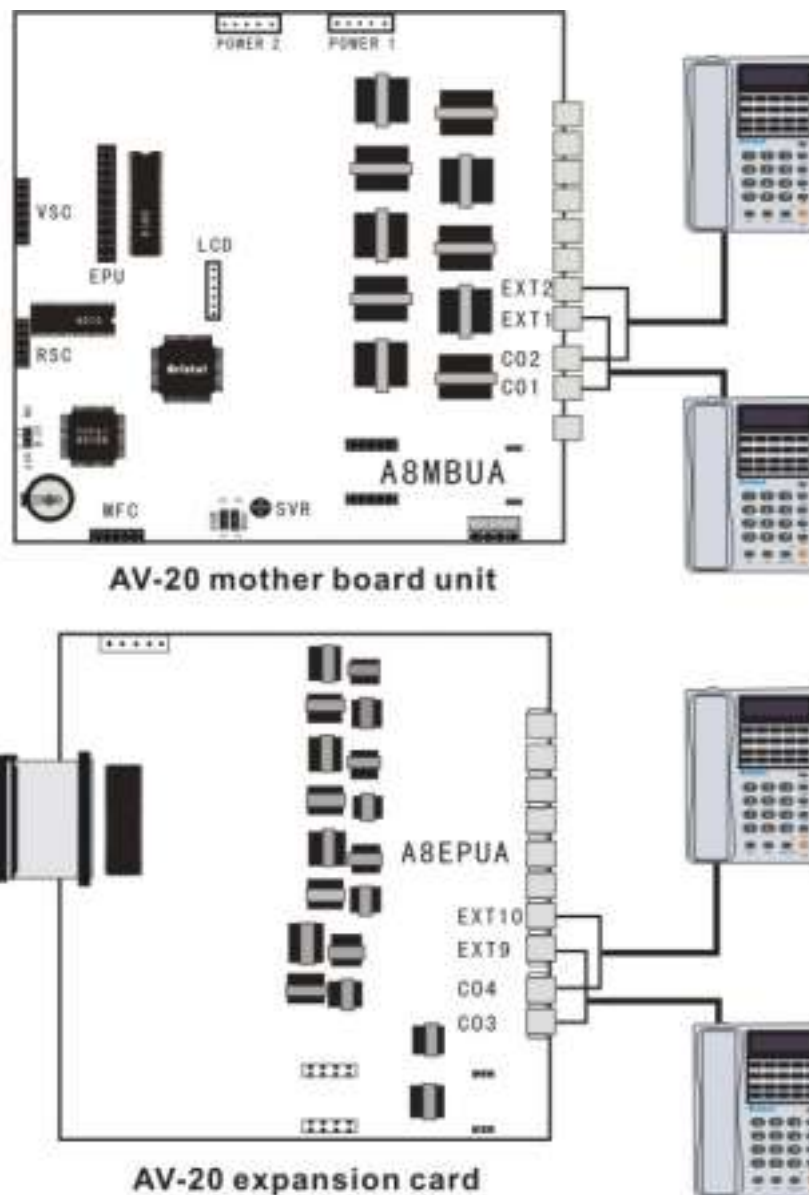
◆ **Description:**

- 1、 A8MBUA can be installed 8 SLT maximum.
- 2、 From **【ST1】** to **【ST8】**.
- 3、 2 wires are used for SLT wiring, from left to right, including AR, AT. The details are as above.
- 4、 AT/AR : 2 wires for SLT (non-polarity)

5.7 Installation of Power-fail SLT

During Power-fail, the system will automatically connect the co1 with the extension in EXT1, and connect co2 with the extension in EXT2, and connect co3 with the extension in EXT9, and connect the co4 with the extension in EXT10. Please note that only SLT can be used during power-during, unless a backup battery is provided.

For the details shown as below:



5.8 Door Phone Wiring

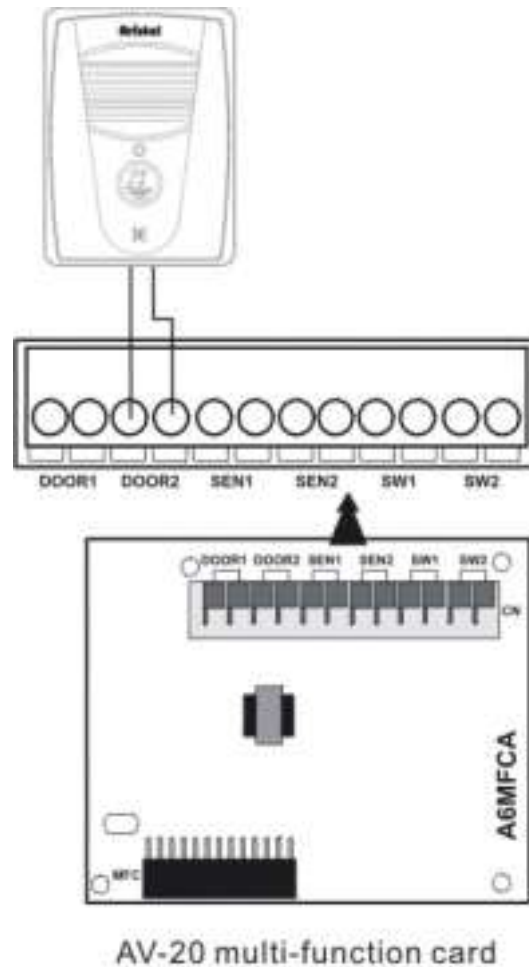


Chart 5-7 Door Phone Wiring

◆ Description:

- 1、 If door phone is needed for this system, A6MFCA must be installed.
- 2、 Multi-function Card(A6MFCA) :contain 2 door phone inputs, 2 relay inputs & 2 sensor inputs
- 3、 【DOOR1】、 【DOOR2】 just for door phone inputs, standard 2 wires with non-polarity,
- 4、 Built-in 2 wires are used for this installation. For the details of wiring please see above chart for reference.
- 5、 Check the setting of system program in Zone 602.

5.9 Installation of Multi-function Sensor

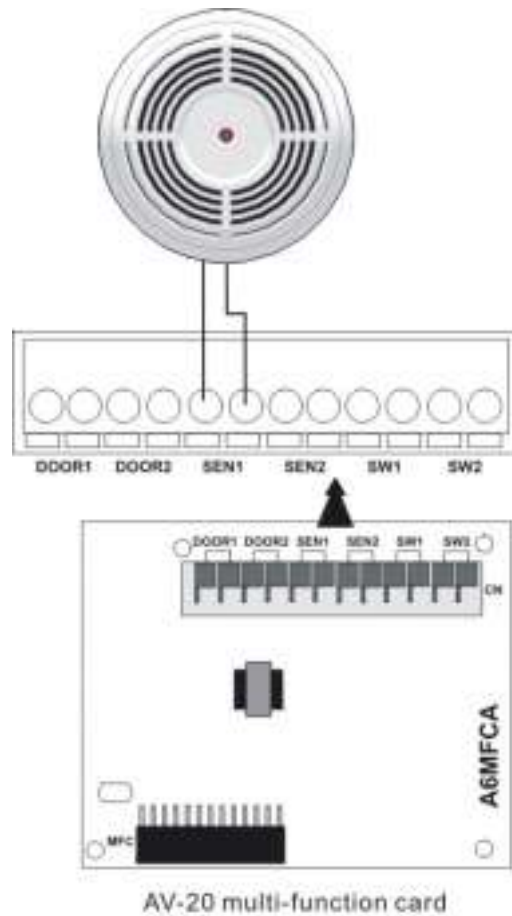


Chart 5-8 Installation of Multi-function Sensor

◆ **Description:**

- 1、 If multi-function sensor is needed, A6MFCA must be installed.
- 2、 Multi-function Card (A6MFCA) : contain 2 door phone inputs, 2 relay inputs & 2 sensor inputs.
- 3、 **【SEN1】**、 **【SEN2】** for multi-function relay installation, standard 2 wires with non-polarity.
- 4、 Built-in 2 wires are used for this installation. For the details of wiring please see above chart for reference.
- 5、 Check the setting of system program in Zone303.

5.10 Multi-function Relay, Door Switch, Installation

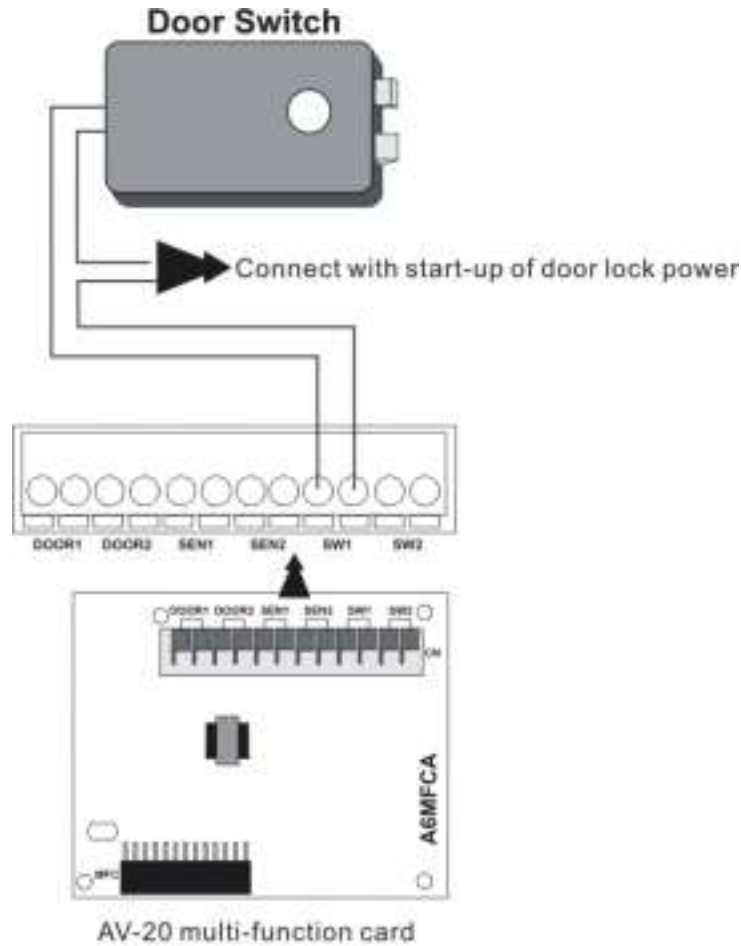


Chart 5-9 Installation for Multi-function Relay, Door Switch

◆ **Description:**

- 1、 If multi-function relay is needed, A6MFCA must be installed.
- 2、 Multi-function Card (A6MFCA) : contain 2 door phone inputs, 2 relay inputs & 2 sensor inputs.
- 3、 **【SW1】**、 **【SW2】** just for multi-function relay installation inputs
- 4、 This relay can be used to suit your requirement by changing the program. Built-in 2 wires are used for this installation. For the details of wiring please see above.
- 5、 For the installation mode please see the chart.
- 6、 Check the setting of system program in Zone 302.

5.11 Installation for External Paging

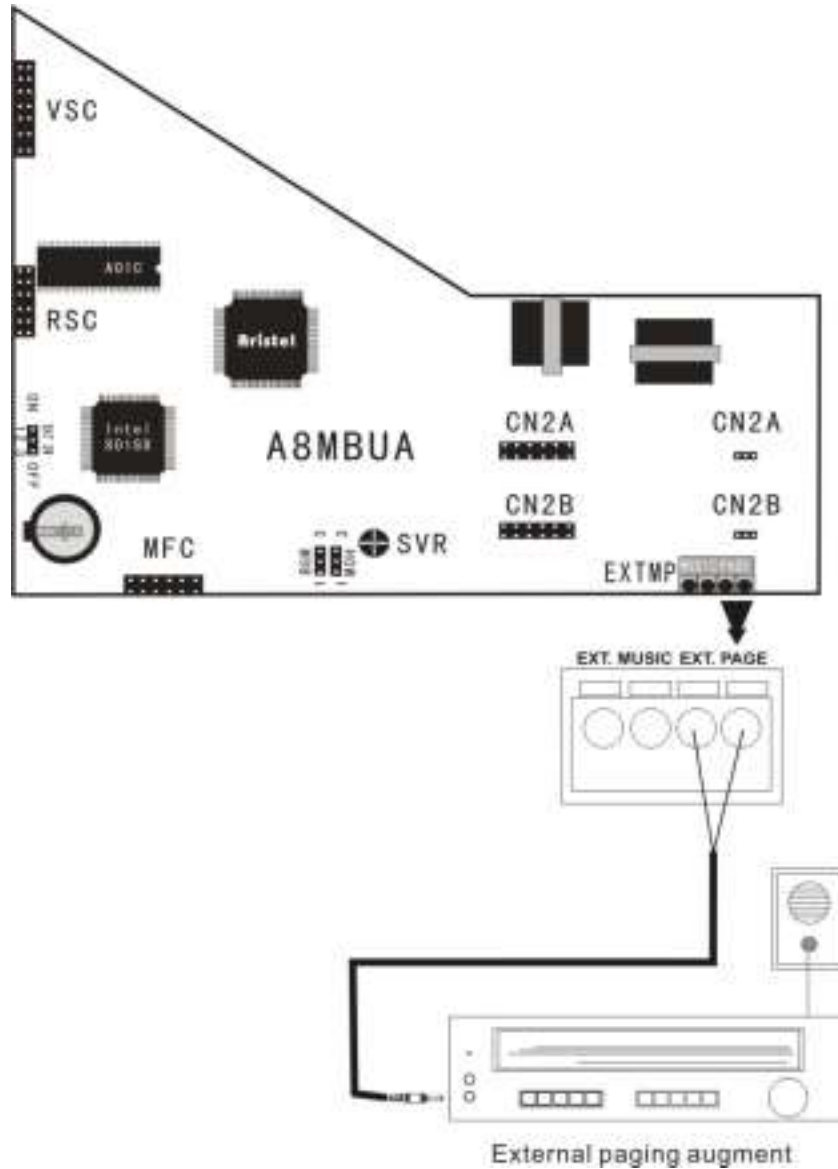


Chart 5-10 Installation of External Paging

◆ **Description:**

- 1、 This system offers a group of external paging zones.
- 2、 External paging input, 【EXT. PAGE】 , locates on the A8MBUA.
- 3、 2 wires are used for external paging. For the installation mode please see the above.

5.12 Installation of External Music Sources

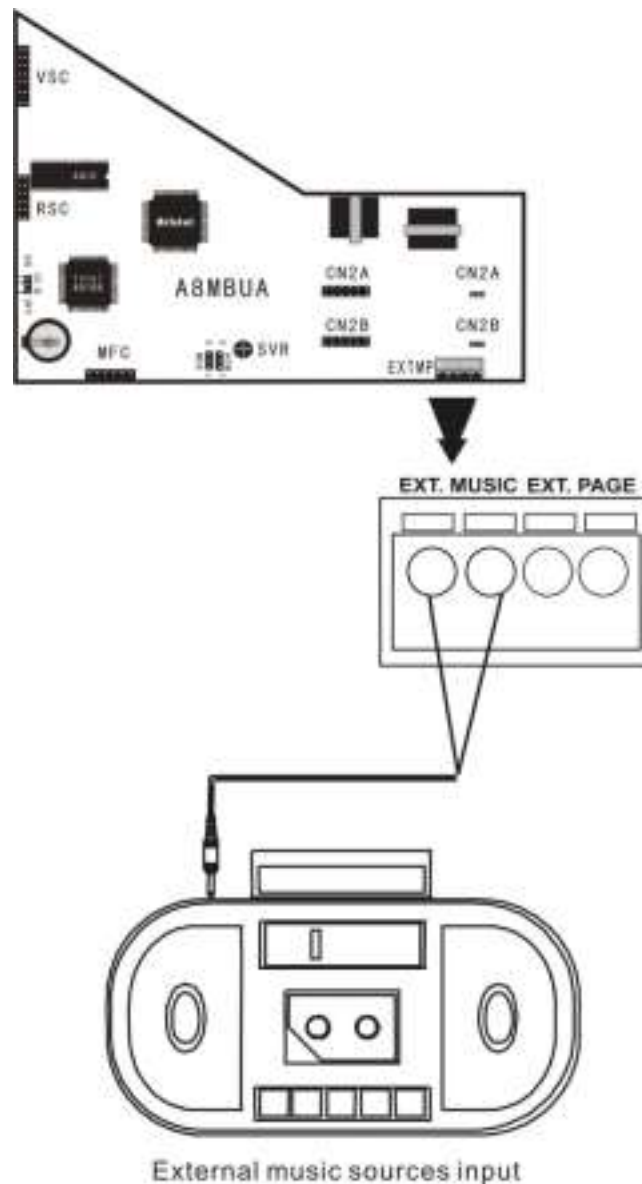
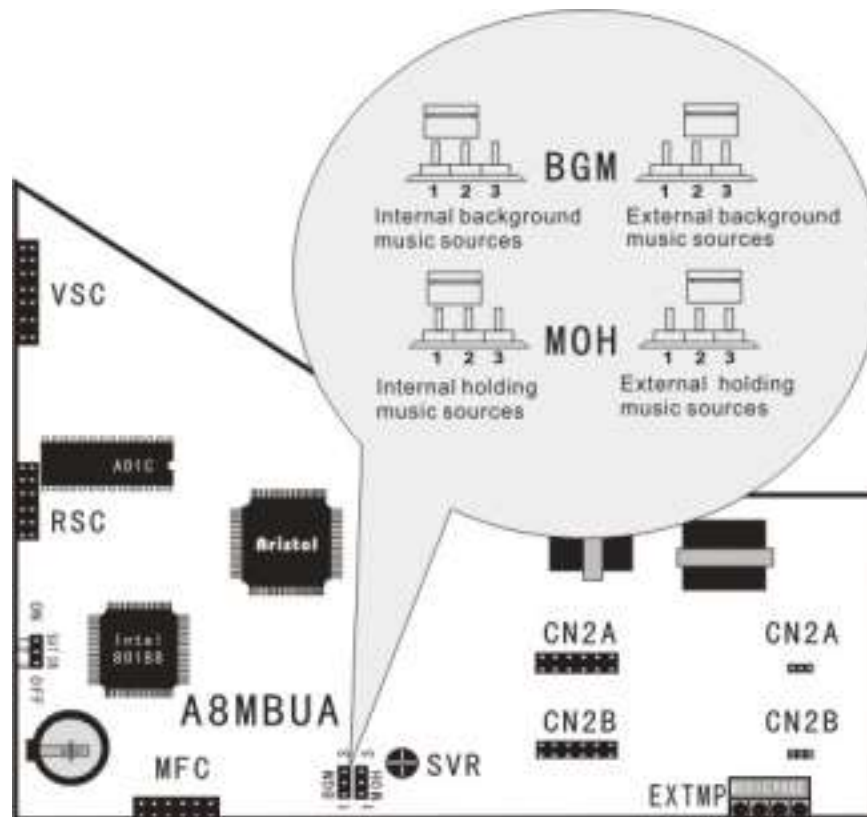


Chart 5-11 Installation of External Music Sources

◆ **Description:**

- 1、 This system offers external music sources input.
- 2、 External music sources input, **【EXT MUSIC】** , locates on A8MBUA.
- 3、 2 wires are used. For the installation, please see the above chart.

- 4、 After External Music Source has been installed, select the external source to be Background Music or Music On Hold by Jumper Selection on A8MBUA. **BGM** : Background Music selected (Internal music resources: jump to 1&2, External music resources: jump to 2&3). **MOH** :Music on hold selected (Internal music resources: jump to 1&2, External music resources: jump to 2&3) .
- 5、 Please see the below chart the Details of the Jumper Selection on A8MBUA:



5.13 RS232 (SMDR) Installation

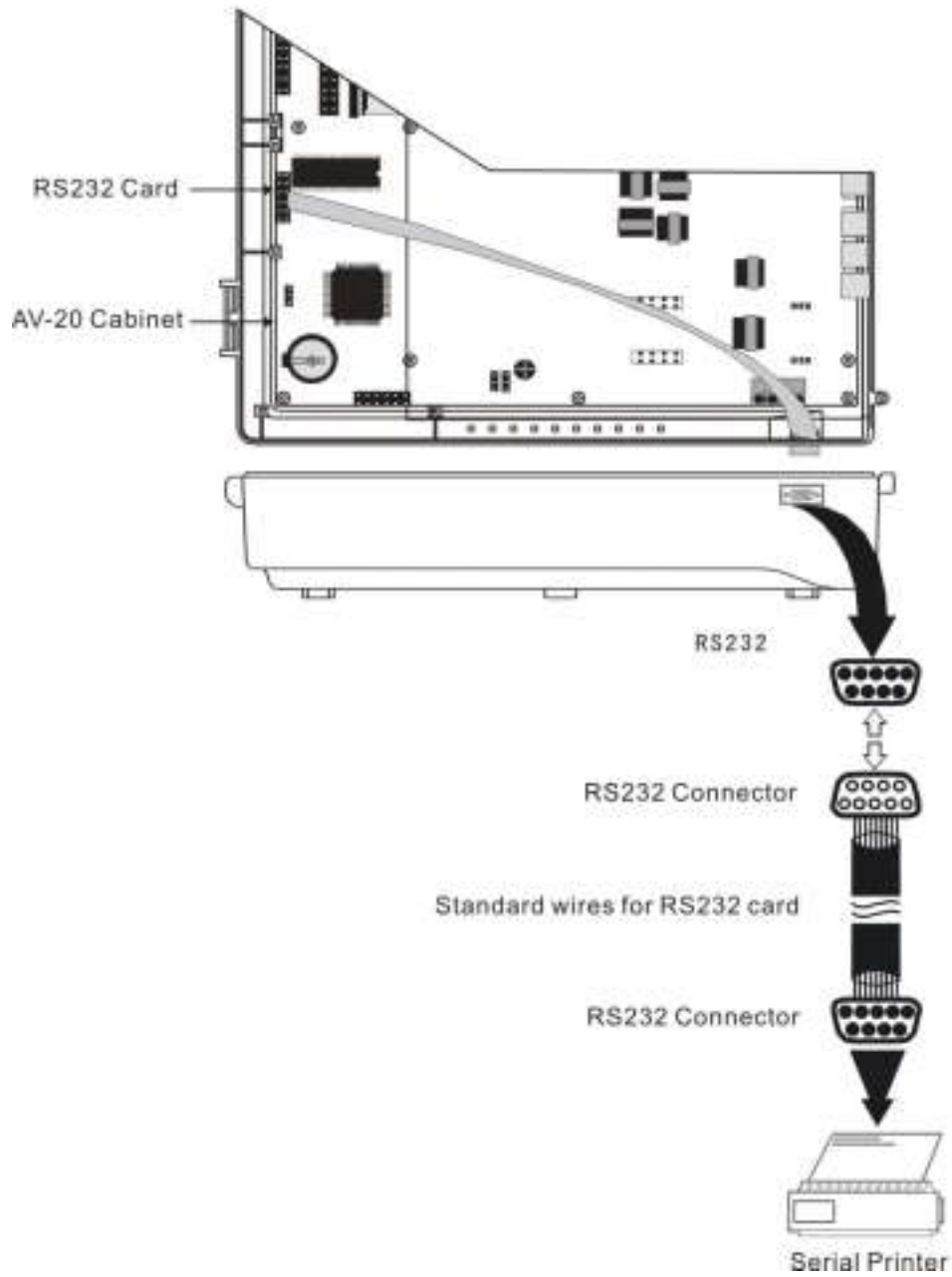


Chart 5-12 RS-232 Output Installation

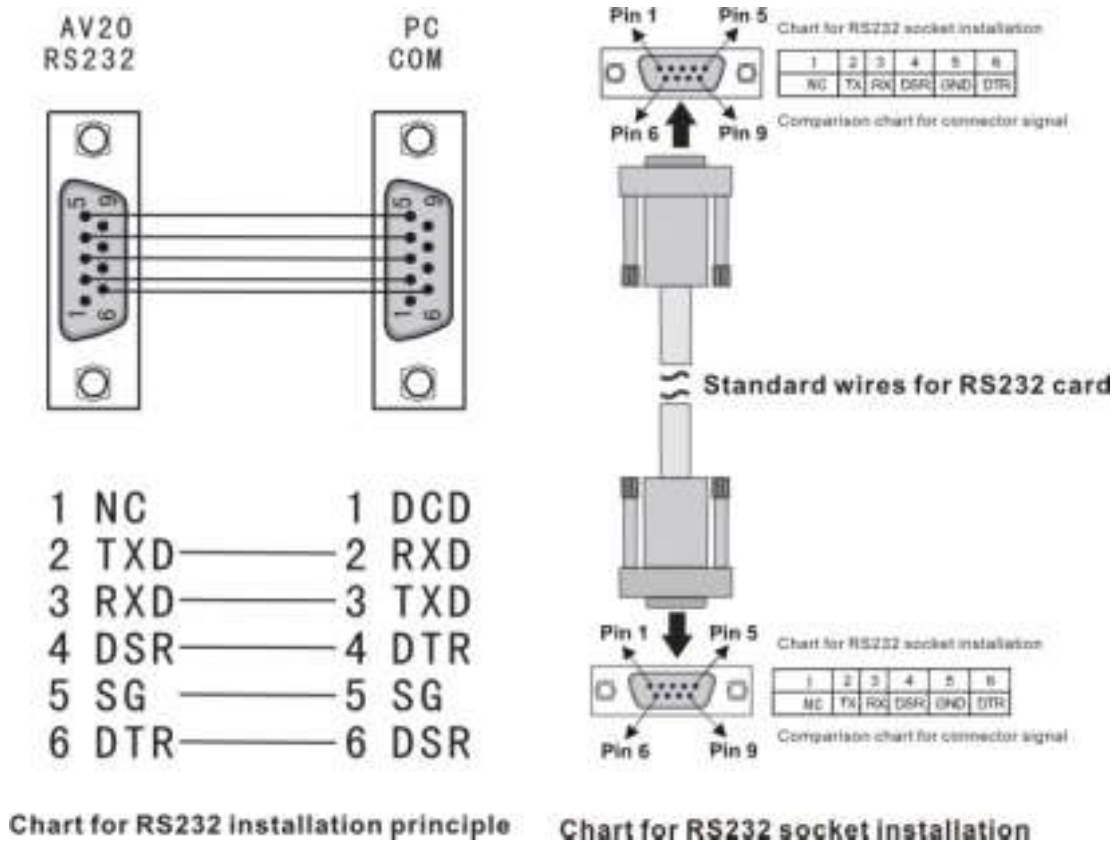


Chart 5-13 Layout for how to connect RS232 with PC

◆ **Description:**

- 1、 Only 1 RS-232 output outlet for this system.
- 2、 RS-232 must be installed in the A8MBUA.
- 3、 The jumper (JP1~JP4) should be confirmed to be in the right place. For jump position, please see the description of Chart 4-8 A6RSCA (RS232 Card) Layout.
- 4、 Note: only pins No.2~6 on RS232 to be used in AV-20 KTS.