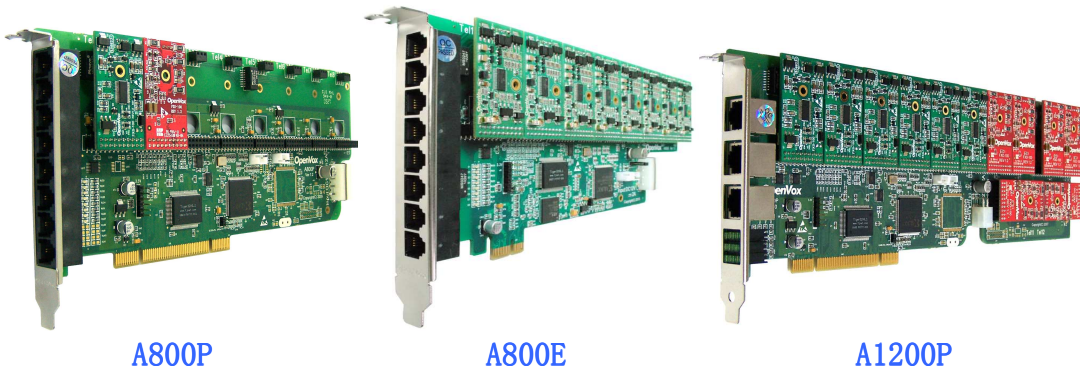




深圳开源通信有限公司

*OpenVox-Best Cost Effective Asterisk Cards*

## OpenVox A800P A800E A1200P User Manual



A800P

A800E

A1200P

*Written by: James. zhu*

*Email: james. zhu@openvox. cn, zhulizhong@gmail. com*

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深圳开源通信有限公司

*OpenVox-Best Cost Effective Asterisk Cards*

OpenVox Communication Co. Ltd.

Address: F/3, Block No.127, Jindi Industrial Zone,  
Shazui Road, Futian district, ShenZhen, Guangdong 518048, China

Tel:+86-755-82535095, 82535461, Fax:+86-755-82535174

E-Mail: [sales@openvox.cn](mailto:sales@openvox.cn) [support@openvox.cn](mailto:support@openvox.cn)

IM for Technical Support: [support@openvox.cn](mailto:support@openvox.cn) [James.zhu@openvox.cn](mailto:James.zhu@openvox.cn)

Business Hours: 9:00AM-18:00PM from Monday-Friday

URL: [www.openvox.cn](http://www.openvox.cn)

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## Chapter 1 Overview

### 1. What is A800P/A800E/A1200P

A800P/A800E/A1200P series is a modular analog telephony interface product. It is designed to be the small to middle business PBX usage. For example, each A1200P can have up to 12 ports per card, and user can install 4 pcs of A1200P in one PC to get 48 ports.

A800P/A800E/A1200P series must be used with FX0-100 or FXS-100 together to build a workable system. The FX0-100 and FXS-100 modules are also pin to pin compatible with X100M and S100M.

#### Key Benefits:

Low CPU Payload : below 25% with 8 PCs of A1200P(96 ports) after driver installed, on a Celereon D 2.53Ghz

Scalable: just add additional cards to extend system

Be easy to use: module Pin to Pin compatible with Digium' s X100M and S100M. User can use diguim' s X100M/S100M module on this card, or use our FX0-100/ FXS-100 Module on TDM1200P

Excellent choice of upgrade Digium' s TDM400P based Asterisk system to A1200P, achieving 96 ports density or more in one PC, and protecting user investment by directly making use of user investment on modules of TDM400P

RoHS compliant

Certificates: CE, FCC

trixbox Officially Certified

Misc:(for A800P)

Temperature Operation: 0 to 50° C

Temperature Storage: - 40 to 125° C

Humidity:10 TO 90% NON-CONDENSING

Voltage:3.3/5V/12V, 3REN

Power Dissipation Max:1.7W/4W/23.2W

Misc:(for A800E)

Temperature Operation: 0 to 50° C

Temperature Storage: - 40 to 125° C

Humidity:10 TO 90% NON-CONDENSING

Voltage:3.3V

Power Dissipation Max:3.46W

Misc: (for A1200P)

Temperature Operation: 0 to 50° C

Temperature Storage: - 40 to 125° C

Humidity:10 TO 90% NON-CONDENSING

Voltage:3.3V, 5V

Power Dissipation Max:1.7W, 6W

## Disclaimers

Asterisk® is a registered trademark of Digium, Inc.

## 2. What is Asterisk:

The Definition of Asterisk is described as follow:

Asterisk is a complete PBX in software. It runs on Linux, BSD, Windows (emulated) and provides all of the features you would expect from a PBX and more. Asterisk does voice over IP in four protocols, and can interoperate with almost all standards-based telephony equipment using relatively inexpensive hardware.

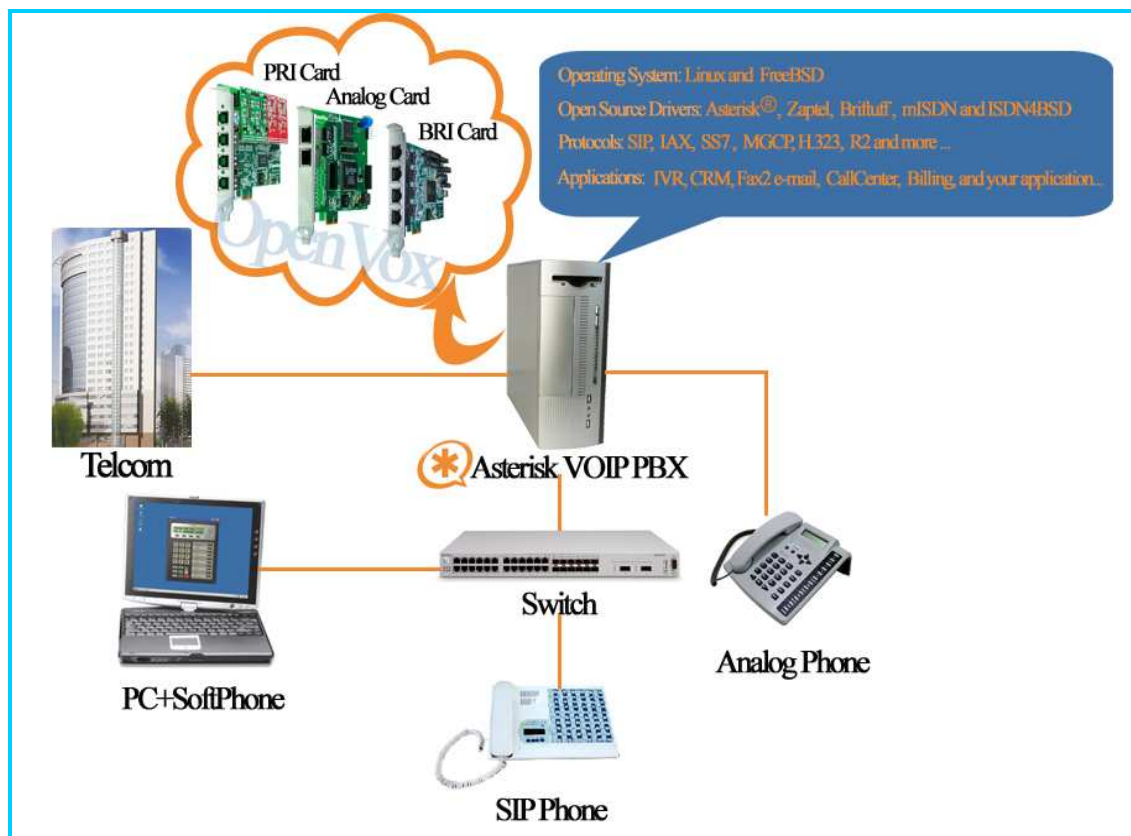


Figure 1: Asterisk\_OpenVox Setup

Asterisk provides Voicemail services with Directory, Call Conferencing, Interactive

Voice Response, Call Queuing. It has support for three-way calling, caller ID services, ADSI, IAX, SIP, H.323 (as both client and gateway), MGCP (call manager only) and SCCP/Skinny([voip-info.org](http://voip-info.org)).

---

## Chapter 2 Software Installation and Configuration

### 1. Hardware Installation and Setup

There are 2 RJ45 interfaces for A800P/A800E and 3 RJ45 interfaces for A1200P on the bracket. There are 4 corresponding modules supported on each jack on main motherboard.

There are 8 pins on the each RJ45 socket. A800P/A800E/A1200P series uses the 2 pins of it as a pair, to connect to your 2-wire telephone line, so each RJ45 socket can connect 4 telephone lines. Please see figure 7 and figure 8 for the setting of A800P/A800E/A1200P. User has to use a splitter (refer figure 4) to connect RJ11 normal telephone line. **If the card equips with a FXS, please plug in the power supply cable into power supply connector and connecting PSTN line into FX0 port and telephone into FXS.**

**Attention:** if you found J914 (input) and J915 (output) interfaces on the card, it means the card support clock line. When you use timing cable, please make sure the timing cable connection input on the first card and output on the second card. For more detail information, please refer to the following link:  
<http://bbs.openvox.cn/viewthread.php?tid=874&extra=page%3D>

### 2. Software Installation and Setup

A800P/A800E/ A1200P series supports zaptel software device driver on Linux. To use A800P/A800E/A1200P series, user should install zaptel and asterisk.

A800P/A800E/A1200P series device driver is a signal file named opvxa1200.c. A800P/A800E and A1200P share the same driver (opvxa1200.c). It can be downloaded from:

[http://downloads.openvox.cn/pub/drivers/zaptel/patches/a800\\_a1200/](http://downloads.openvox.cn/pub/drivers/zaptel/patches/a800_a1200/)

Before installing zaptel and asterisk, please make sure that some supporting packages have been installed.

Note that if there is no kernel source in the system, user should install them. User can run **yum** again: ***yum install kernel-devel***.

It is time to check for the availability of some supporting packages:

```
rpm -q bison  
rpm -q bison-devel
```

```
rpm -q ncurses
rpm -q ncurses-devel
rpm -q zlib
rpm -q zlib-devel
rpm -q openssl
rpm -q openssl-devel
rpm -q gnutls-devel
rpm -q gcc
rpm -q gcc-c++
```

If any of those packages are not installed install them by using yum

```
yum install bison
yum install bison-devel
yum install ncurses
yum install ncurses-devel
yum install zlib
yum install zlib-devel
yum install openssl
yum install openssl-devel
yum install gnutls-devel
yum install gcc
yum install gcc-c++
```

User can install the driver via the following steps (assuming use has the source code of zaptel device driver installed in /usr/src/zaptel-1.4.XX directory):

- 1) Checking the A800P/A800E/A1200P hardware by command: **lspci -vvvvv**  
From the figure 2, user can see that there is a device called communication controller interface be found.

```
02:05.0 Ethernet controller: Marvell Technology Group Ltd. 88E8001 Gigabit Ethernet Controller (rev 13)
Subsystem: ASUSTeK Computer Inc. Marvell 88E8001 Gigabit Ethernet Controller (Asus)
Control: I/O+ Mem+ BusMaster+ SpecCycle- MemWINV+ VGASnoop- ParErr- Stepping- SERR+ FastB2B-
Status: Cap+ 66MHz+ UDF- FastB2B+ ParErr- DEVSEL=medium >TAbort- <TAbort- <MAbort- >SERR- <PERR-
Latency: 64 (5750ns min, 7750ns max), Cache Line Size 04
Interrupt: pin A routed to IRQ 209
Region 0: Memory at feafc000 (32-bit, non-prefetchable) [size=16K]
Region 1: I/O ports at d800 [size=256]
Expansion ROM at feac0000 [disabled] [size=128K]
Capabilities: [48] Power Management version 2
Flags: PMEClk- DSI- D1+ D2+ AuxCurrent=0mA PME (DO+,D1+,D2+,D3hot+,D3cold+)
Status: DO PME-Enable- DSel=0 DScale=1 PME-
Capabilities: [50] Vital Product Data

02:0d.0 Communication controller: Tiger Jet Network Inc. Tiger3XX Modem/ISDN interface
Subsystem: Unknown device 9519:0003
Control: I/O+ Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr- Stepping- SERR+ FastB2B-
Status: Cap+ 66MHz+ UDF- FastB2B- ParErr- DEVSEL=medium >TAbort- <TAbort- <MAbort- >SERR- <PERR-
Latency: 64 (250ns min, 32000ns max)
Interrupt: pin A routed to IRQ 217
Region 0: I/O ports at d400 [size=256]
Region 1: Memory at feafb000 (32-bit, non-prefetchable) [size=4K]
Capabilities: [40] Power Management version 2
Flags: PMEClk- DSI+ D1- D2+ AuxCurrent=55mA PME (DO+,D1-,D2+,D3hot+,D3cold+)
Status: DO PME-Enable- DSel=0 DScale=0 PME-
```

Figure 2: hardware detection



## 2) Downloading and compiling

1. Copy `opvxa1200.c` to `/usr/src/zaptel-1.4.XX/kernel`.
2. Modify `/usr/src/zaptel-1.4.XX/makefile`:
  - ✓ Find the line start with `TOPDIR_MODULES=`
  - ✓ Add `opvxa1200`. Before editing, the Makefile should be like this:

```
TOPDIR_MODULES:=zaptel tor2 torisa wcusb wcfxo wctdm wctdm24xxp \  
ztdynamic ztd-eth wctlxxp wct4xxp wctellxp pciradio \  
ztd-loc # ztdummy
```

After modified, it looks like

```
TOPDIR_MODULES=zaptel tor2 torisa wcusb wcfxo wctdm wctdm24xxp \  
ztdynamic ztd-eth wctlxxp wct4xxp wctellxp pciradio \  
opvxa1200 \  
ztd-loc # ztdummy
```

- ✓ Find the line: `ztmonitor.o: kernel/zaptel.h`
  - ✓ After that line, add another a new line:

```
opvxa1200.o : kernel/zaptel.h kernel/wctdm.h
```
  - ✓ Modify `zaptel.sysconfig` in `/usr/src/zaptel-1.4.XX` directory.
  - ✓ Add the following line

```
MODULES="$MODULES opvxa1200" # OPENVOX A1200P
```
  - ✓ Save the Makefile and exit your editor
3. Under `/usr/src/zaptel-1.4.XX`, execute the commands:

```
./configure  
make  
make install  
make config
```

## 4. Installing asterisk

```
cd /usr/src/asterisk-1.4.XX  
./configure  
make  
make install  
make config
```

5. Detect and load modules for `opvxa1200`:

```
./genzaptelconf -sdvM under /usr/src/zaptel-1.4.XX/kernel/xpp/Utils
```

The command will automatically generate the `zaptel.conf` under `/etc` and `zapata-channels.conf` under `/etc/asterisk` for you. But be sure, sometimes, due to some reasons, it can not work perfectly. Please check the setting of `zaptel.conf`, it looks like this:

```
# Autogenerated by ./genzaptelconf -- do not hand edit
# Zaptel Configuration File
#
# This file is parsed by the Zaptel Configurator, ztcfg
#
# It must be in the module loading order

# Span 1: OPVXA1200/0 "OpenVox A1200P/A800P Board 1" (MASTER)
fxsks=1
fxsks=2
fxoks=3
fxoks=4

# Global data

loadzone      = us
defaultzone   = us
```

Figure 3: zaptel.conf

```
modprobe zaptel
modprobe opvxa1200
ztcfg -vvvv
```

After loading zaptel and opvxa1200 driver, user should check the zapata.conf and zapata-channels.conf, make sure the zapata-channels.conf has been included into zapata.conf. zapata-channels.conf should be same with figure 4, and make sure that the context in zapata-channels.conf should exists in extensions.conf

```
; Autogenerated by ./genzaptelconf -- do not hand edit
; Zaptel Channels Configurations (zapata.conf)
;
; This is not intended to be a complete zapata.conf. Rather, it is intended
; to be #include-d by /etc/zapata.conf that will include the global settings
;
; Span 1: OPVXA1200/0 "OpenVox A1200P/A800P Board 1" (MASTER)
;;; line="1 OPVXA1200/0/0"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 1
context=default

;;; line="2 OPVXA1200/0/1"
signalling=fxs_ks
callerid=asreceived
group=0
context=from-pstn
channel => 2
context=default

;;; line="3 OPVXA1200/0/2"
signalling=fxo_ks
callerid="Channel 3" <6003>
mailbox=6003
group=5
context=from-internal
channel => 3
callerid=
mailbox=
group=
context=default

;;; line="4 OPVXA1200/0/3"
signalling=fxo_ks
callerid="Channel 4" <6004>
mailbox=6004
group=5
context=from-internal
channel => 4
callerid=
mailbox=
group=
context=default
```

Figure 4: Zapata-channels.conf

## 6. Starting asterisk and test calls

Checking the zap channel loading from asterisk console:

```
asterisk -vvvvvvvc
```

Entering asterisk console, run command: zap show channels. If user can see the zap channels, which means the zap channels have been loaded into asterisk.

```

Connected to Asterisk 1.4.8 currently running on new-host-3 (pid = 2716)
Verbosity is at least 16
-- Remote UNIX connection
new-host-3*CLI> zap show channels

```

Chan	Extension	Context	Language	MOH	Interpret
ypseudo		default			default
	1	demo			default
	2	demo			default
	3	from-internal			default
	4	from-internal			default

Figure 5: zap\_show\_channels

```

-- Starting simple switch on 'Zap/1-1'
[May 9 13:55:08] NOTICE[32339]: chan_zap.c:6379 ss_thread: Got event 18 (Ring Begin)...
[May 9 13:55:09] NOTICE[32339]: chan_zap.c:6379 ss_thread: Got event 2 (Ring/Answered)...
-- Executing [s@demo:1] Wait("Zap/1-1", "1") in new stack
-- Executing [s@demo:2] Answer("Zap/1-1", "") in new stack
-- Executing [s@demo:3] Set("Zap/1-1", "TIMEOUT(digit)=5") in new stack
-- Digit timeout set to 5
-- Executing [s@demo:4] Set("Zap/1-1", "TIMEOUT(response)=10") in new stack
-- Response timeout set to 10
-- Executing [s@demo:5] Background("Zap/1-1", "demo-congrats") in new stack
-- <Zap/1-1> Playing 'demo-congrats' (language 'en')
new-host-3*CLI>

```

Figure 6: inbound call

### Chapter 3 Hardware Setting

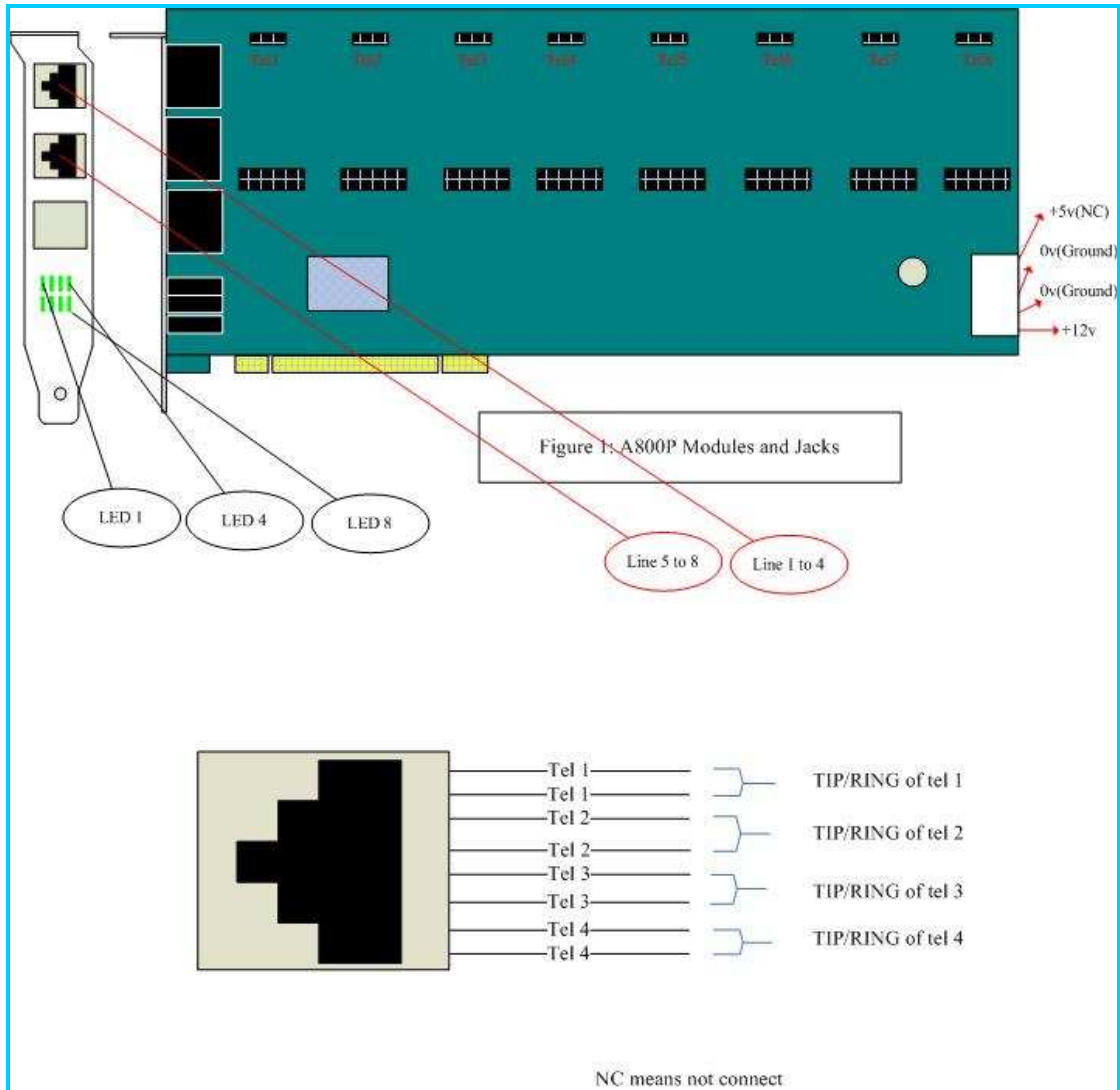


Figure 7: A800P Hardware Configuration

Notice: A800P V1.2 above and A800E have eight RJ11 interfaces, which do not need to connect with splitter.

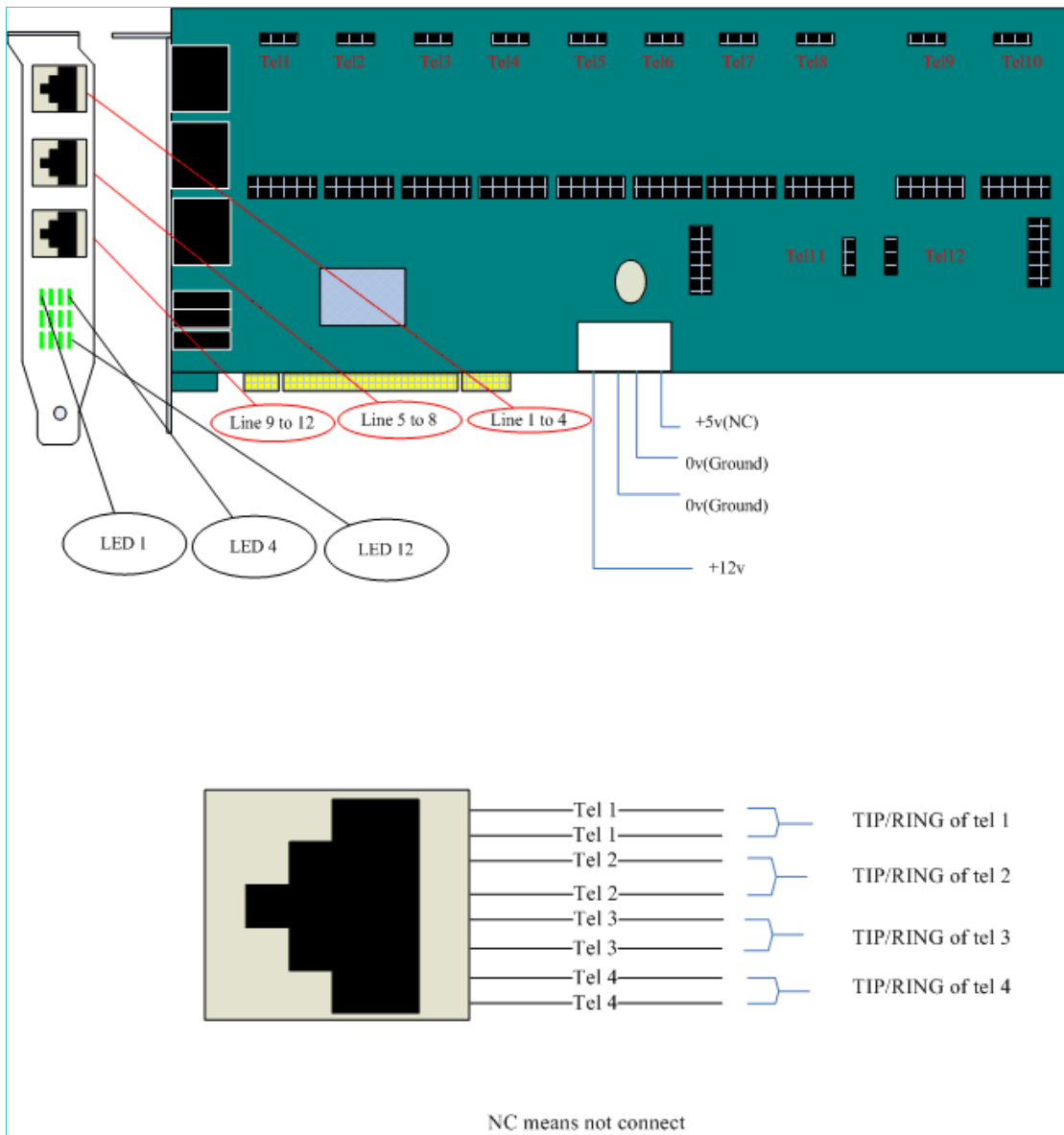


Figure 8: A1200P Hardware Configuration



Figure 9: A800P/A1200P Splitter

**Notes:**

**Test environments are:**

Centos-5.0

Kernel version: 2.6.18-8.el5

Zaptel: 1.4.12.1

Asterisk: 1.4.20.1

Hardware: OpenVox A1200P

Some problems with compiling A800P/A800E/A1200P have been summarized and documented into FAQ of A800P/A800E/A1200P; please check that under A800P/A800E/A1200P categories.

## Chapter 4 References

[www.openvox.cn](http://www.openvox.cn)

[www.digium.com](http://www.digium.com)

[www.asterisk.org](http://www.asterisk.org)

[www.voip-info.org](http://www.voip-info.org)

[www.asteriskguru.com](http://www.asteriskguru.com)