

# OpenVox

深圳开源通信有限公司

*OpenVox -Best Cost Effective Asterisk® Cards*

## OpenVox® B800P User Manual



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# OpenVox

深圳开源通信有限公司

*OpenVox -Best Cost Effective Asterisk® Cards*

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## Chapter 1 Overview

### 1. What is B800P

B800P is a PCI 2.2 compliant card supporting 8 BRI S/T interfaces, with an onboard multi NT power feeding circuits. NT/TE mode can be individually configured on each of the 8 ports.

B800P can be implemented for building Open Source Asterisk® based systems such as ISDN PBX and VoIP gateway.

#### **Target Applications:**

High Performance ISDN PC Cards

ISDN PABX for BRI

VoIP Gateways

ISDN LAN Routers for BRI

ISDN Least Cost Routers for BRI

ISDN Test Equipment for BRI

#### **Main Features:**

Eight integrated S/T interfaces

ITU-T I.430 and TBR 3 certified and S/T ISDN supporting in TE and NT mode

Integrated PCI bus interface (Spec.2.2) for 3.3V and 5V signal environments

DTMF detection on all B-channels

Multiparty audio conferences bridge

Onboard power feeding for 8 NT Ports

PCM bus connectors daisy chaining

Each of the 8 ports can be independently configured for TE or NE mode

Full software and hardware compatible with Junghanns.NET™ Bristuff driver and mISDN© driver

Application ready: use Asterisk® to build your IP-PBX/Voicemail system

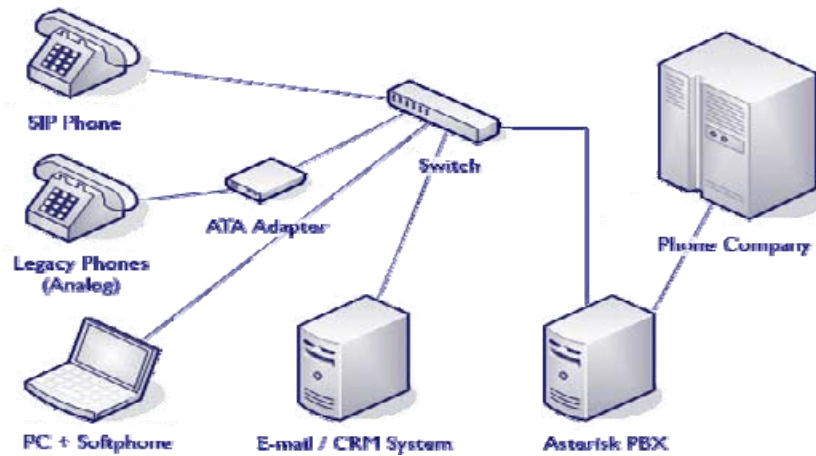
RoHS compliant

Certificates: CE, FCC

### 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® Setup**

Source (<http://www.siriusit.co.uk/uploads/images/consulting/Asterisk®Setup.gif>)

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).

## Chapter 2 Card Installation and Configuration

### 1. Hardware Installation and Setup

#### 1) Configure the Jumper Settings

Please check the jumper setting first. To install B800P, user should follow these steps:

##### A. Setting Card ID Switch

User should pay attention to the card id switch, if user wants to install more than one cards of B800P in one pc. Please follow these produces:

1. The card id of the first card must be set to 0, and the second card should be set to 1, and so on.
2. The first card is a card that will be initialized (i.e installing driver) first when system is booting.
3. At most of cases, Linux will initialize PCI devices according to PCI slot order. The slot is nearest to the CPU will be initialized first; the slot at the far end from CPU will be initialized at last. That is to say that if user has more than one cards of B800P in pc, the one is nearest to CPU should be set to card id 0.
4. For more details about Card ID, please check F&Q section.

##### B. Adjusting Termination of S/T Interface (100 ohm)

1. If a port works on NT mode, user should set jumper to CONNECT (ON).
2. If a port works on TE mode, Theoretically it should be to OPEN(OFF), but user might connect to some non-standard isdn terminal equipments that do not have terminal resistors. If you have such equipments, you should set it to CONNECT(ON).

##### C. Power Feeding Connector

These jumpers control whether the card will feed power to the external isdn terminal. User should adjust accordingly based on these produces:

- ✧ If the port will work on TE mode, user **MUST** set the jumper to OPEN(OFF)
- ✧ If this port will work on NT mode, the ISDN terminal requires ISDN power supply, user should set the jumper to CONNECT(ON). *ISDN terminal does not require ISDN power supply, user should set the jumper to OPEN(OFF).*

- D. Power Feeding Input  
If one of the four power feeding connectors is CONNECT (ON), user should connect a D-type connector from pc power supply to this jack, the D-type connector is used to provide power to your CDROM and 3.5" HDD.
  - E. Power Supply Selection  
Some newest model PCs do not provide +5V on the PCI slots, at those cases, use has to set the jumper to 3.3V.
  - F. PCM IN/PCM OUT  
These are for future usages.
- 2) Power off PC, remembering unplug the AC power cable
  - 3) Insert B800P card into a 3.3V or 5.0V PCI slot
  - 4) Plug the hard disk power supply cable (D style) to power feeding input jack if needing providing power to external equipments, please refer jumper setting section for the detail
  - 5) Plug back the AC power cable, and power on PC

If user wants to know the details about hardware configuration of B800P, please refer hardware setting section.

## 2. Software Installation and Setup

B800P supports original Bristuff driver form [junghanns.net](http://www.junghanns.net)<sup>TM</sup>. Users can download it from <http://www.junghanns.net/>. There are few steps to install the driver drivers.

- 1) Checking the B800P hardware by command: `lspci -vvvvvvvvv`. The card information should be found like figure 2.

```
02:04.0 ISDN controller: Cologne Chip Designs GmbH ISDN network Controller [HFC-8S] (rev 01)
Subsystem: Cologne Chip Designs GmbH Unknown device e998
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-
Interrupt: pin A routed to IRQ 169
Region 0: I/O ports at a000 [size=8]
Region 1: Memory at f7004000 (32-bit, non-prefetchable) [size=4K]
Capabilities: [40] Power Management version 2
Flags: PMEClk- DSI+ D1+ D2+ AuxCurrent=0mA PME (D0+,D1+,D2+,D3hot+,D3cold-)
Status: D0 PME-Enable- DSel=0 DScale=0 PME+
```

Figure 2: PCI\_B800P

2) Checking the supporting packages

If there is no kernel source in the system, user should install it. User can run **yum** again: `yum install kernel-devel`. If user runs this command **yum** will install the sources for your current version of the kernel.

Please check the availability of some other 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 is 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++
```

3) Downloading, unzipping and compiling driver

- A. Download the stable version of bristuff drivers from <http://www.junghanns.net/>, and copy the tar file to /usr/src:

```
cp bristuff-<version>.tar.gz /usr/src
cd /usr/src/
tar -xvzf bristuff-<version>.tar.gz
```

- B. Download OpenVox patch called qozap.c from [www.openvox.com.cn](http://www.openvox.com.cn). It contains a patched qozap.c file. User overwrites the original qozap.c file with the new qozap.c under /usr/src/bristuff-<version>/qozap.



C. Make links with kernel source:

```
ln -s /usr/src/kernels/2.6.18-8.el5-i686/ /usr/src/linux-2.6
```

Here, under /usr/src there is kernel source, user must create link linux-2.6 under /usr/src/. There are many files under /usr/src/bristuff-0.3.0-PRE-1y-j, please check:

```
[root@new-host bristuff-0.3.0-PRE-1y-j]# ls
asterisk          CHANGES      download.sh   ISDNguard     libpri
asterisk-1.2.23  compile.sh    INSTALL      libgsmat      libpri-1.2.4
asterisk-1.2.23.tar cwain         install.sh    libgsmat-0.0.2 libpri-1.2.4.tar
[root@new-host bristuff-0.3.0-PRE-1y-j]# cd ..
[root@new-host src]# cd bristuff-0.3.0-PRE-1y-j/
[root@new-host bristuff-0.3.0-PRE-1y-j]# ls
asterisk          CHANGES      download.sh   ISDNguard     libpri
asterisk-1.2.23  compile.sh    INSTALL      libgsmat      libpri-1.2.4
asterisk-1.2.23.tar cwain         install.sh    libgsmat-0.0.2 libpri-1.2.4.tar
[root@new-host bristuff-0.3.0-PRE-1y-j]# ls -l
total 27188
drwxrwxrwx  1 root root      15 Sep 19 13:36 asterisk -> asterisk-1.2.23
drwxr-sr-x  25 root root    4096 Sep 20 12:14 asterisk-1.2.23
-rw-r--r--  1 root root 19005440 Aug 20 16:50 asterisk-1.2.23.tar
-rw-r--r--  1 root root   18405 Jul 25 15:40 CHANGES
-rwxrwxrwx  1 root root    2181 Jun  9 2006 compile.sh
drwxr-xr-x  3 root root    4096 Sep 20 12:08 cwain
-rwxrwxrwx  1 root root     781 Sep 20 09:45 download.sh
-rw-r--r--  1 root root   2377 Apr 27 2005 INSTALL
-rw-r--r--  1 root root     40 Jul 12 2004 install.sh
drwxr-xr-x  2 root root    4096 Sep 19 12:18 ISDNguard
lrwxrwxrwx  1 root root     14 Sep 19 13:36 libgsmat -> libgsmat-0.0.2
drwxr-xr-x  2 root root    4096 Sep 20 12:08 libgsmat-0.0.2
lrwxrwxrwx  1 root root     12 Sep 19 13:36 libpri -> libpri-1.2.4
drwxr-xr-x  2 1000 1000   4096 Sep 20 12:08 libpri-1.2.4
-rw-r--r--  1 root root 348160 Sep 19 10:23 libpri-1.2.4.tar
drwxr-xr-x  2 root root    4096 Sep 19 12:18 patches
drwxr-xr-x  3 root root    4096 Sep 20 12:08 qozap
-rwxr-xr-x  1 root root     558 Sep 19 13:36 run_download.sh
drwxr-xr-x  4 root root    4096 Sep 19 12:18 SAMPLES
drwxr-xr-x  3 root root    4096 Sep 19 12:18 TESTING
drwxr-xr-x  3 root root    4096 Sep 20 12:09 zaphfc
lrwxrwxrwx  1 root root     13 Sep 19 13:36 zaptel -> zaptel-1.2.19
drwxr-xr-x 10 root root   12288 Sep 20 12:07 zaptel-1.2.19
-rw-r--r--  1 root root 8345600 Sep 19 10:23 zaptel-1.2.19.tar
drwxr-xr-x  3 root root    4096 Sep 20 12:08 ztgsm
[root@new-host bristuff-0.3.0-PRE-1y-j]#
```

Figure 3: Files\_underbri

D. Compiling Bristuff

```
cd /usr/src/usr/src/bristuff-0.3.0-PRE-1y-j
chmod 777 install.sh
./install.sh
```

Those steps will install zaptel, libpri, qozap and Asterisk®. After finishing those steps, under the source of Asterisk® directory, running: **make samples**, if user install Asterisk® for first time.

- E. Modifying and loading modules for zaptel and qozap  
**vi /etc/zaptel**, and edit the zaptel.conf like this:

```
loadzone=nl
defaultzone=nl
span=1, 1, 1, ccs, ami
# termtype: te
bchan=1-2
dchan=3
```

```
span=2, 2, 1, ccs, ami
# termtype: te
bchan=4-5
dchan=6
```

```
span=3, 3, 1, ccs, ami
# termtype: te
bchan=7-8
dchan=9
```

```
span=4, 4, 1, ccs, ami
# termtype: te
bchan=10-11
dchan=12
```

```
span=5, 5, 1, ccs, ami
# termtype: te
bchan=13-14
dchan=15
```

```
span=6, 6, 1, ccs, ami
# termtype: te
bchan=16-17
dchan=18
```

```
span=7, 7, 1, ccs, ami
# termtype: te
bchan=19-20
```

```
span=8, 8, 1, ccs, ami
```

```
# termtype: te
bchan=22-23
dchan=24
```

vi /etc/Asterisk®/zapata.conf, and edit the zapata.conf like this:

```
;
; Zapata telephony interface
;
; Configuration file

[channels]
;
; Default language
;
;language=en
;
;context=demo
;
;
switchtype = euroisdn

; p2mp TE mode (for connecting ISDN lines in point-to-multipoint mode)
signalling = bri_cpe_ptmp
; p2p TE mode (for connecting ISDN lines in point-to-point mode)
;signalling = bri_cpe
; p2mp NT mode (for connecting ISDN phones in point-to-multipoint mode)
;signalling = bri_net_ptmp
; p2p NT mode (for connecting an ISDN pbx in point-to-point mode)
;signalling = bri_net

pridialplan = local
prilocaldialplan = dynamic
nationalprefix = 0
internationalprefix = 00

priindication = passthrough

echocancel = yes
context=demo
group = 1
; S/T port 1
channel => 1-2
```

```
group = 2
; S/T port 2
context=demo
channel => 4-5
```

```
group = 3
; S/T port 3
context=demo
channel => 7-8
```

```
group = 4
; S/T port 4
context=demo
channel => 10-11
```

```
group = 5
; S/T port 5
context=demo
channel => 13-14
```

```
group = 6
; S/T port 6
context=demo
channel => 16-17
```

```
group = 7
; S/T port 7
context=demo
channel => 19-20
```

```
group = 8
; S/T port 8
context=demo
channel => 22-23
```

```
cd /usr/src/bristuff-0.3.0-PRE-1y-j/qozap
modprobe zaptel
insmod qozap.ko (for kernel 2.6)
ztcfg - vvvvvvvvvvvvvvvv
```

- F. If user wants to modify the dialplan for particular needs, user can edit zaptel.conf, zapata.conf and extensions.conf file under /etc/Asterisk®, and makes sure Asterisk® runs successfully

**Asterisk - vvvvvvvvvvgc**

**Notes:**

**Test environments:**

**OS: Centos 5**

**Kernel version: 2.6.18-8.15**

**Bristuff version: Bristuff-0.3.0-PRE-1y-j**

**Hardware: OpenVox® B800P under TE mode**

## Chapter 3 F&Q

### How to set the ports under NT mode?

Please adjust the interface into NT status first, and load qozap.ko like this:

```
modprobe zaptel
insmod qozap.ko ports=X
ztcfg -vvvvv
```

Here, X is bitmap associating with port configuration of B800P. The example here is:

User sets 1, 2 and 3 are NT mode, 4, 5, 6, 7 and 8 are TE mode.

X (binary) = 00000111

X (Decimal) = 7

Therefore, `insmod qozap.ko ports=7`, refer figure 4 and figure 5 to check the NT setting.

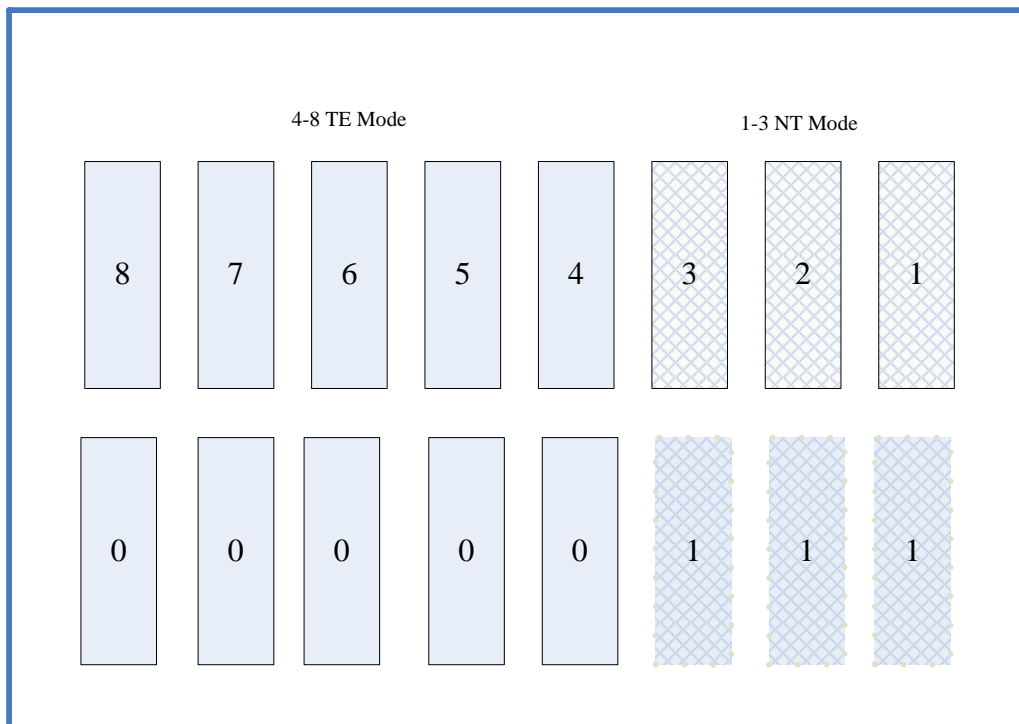


Figure 4: NT\_mode

```
Zapata Telephony Interface Registered on major 196
Zaptel Version: 1.2.19
Zaptel Echo Cancellor: MG2
qozap: no version for "zt_receive" found: kernel tainted.
ACPI: PCI Interrupt 0000:02:04.0[A] -> GSI 18 (level, low) -> IRQ 169
dips = 0x3f cid = 63
qozap: OpenVox B800P card configured at io port 0xa000 IRQ 169 HZ 1000
qozap: S/T ports: 8 [ NT NT NT TE TE TE TE ]
qozap: 1 multiBRI card(s) in this box, 8 BRI ports total, bloop 0, pcmslave 0.
```

Figure 5: Show\_NT

## How to adjust the card id?

User can switch Card ID from S5 labeled in figure 13. The default is ON(1), therefore the value will be **0x3f**. if user wants to insert more than one cards in pc slot, user should adjust the CardID.

An example is given here. user sets 5 and 6 with off status. Therefore, the dips should be 0xf and cid =15. Figure 6 shows that if user runs: **dmesg**, the dips and cid are shown as what user has configured before.

```
Zapata Telephony Interface Registered on major 196
Zaptel Version: 1.2.19
Zaptel Echo Cancellor: MG2
PCI: Enabling device 0000:02:04.0 (0000 -> 0003)
ACPI: PCI Interrupt 0000:02:04.0[A] -> GSI 18 (level, low) -> IRQ 169
dips = 0xf cid = 15
qozap: OpenVox B800P card configured at io port 0xa000 IRQ 169 HZ 1000
qozap: S/T ports: 8 [ NT NT NT TE TE TE TE ]
qozap: 1 multiBRI card(s) in this box, 8 BRI ports total, bloop 0, pcmslave 0.
Registered tone zone 0 (United States / North America)
```

Figure 6: Show\_cardid

Figure 7 shows that the 5 and 6 are switched to be off, the value should be **001111**.

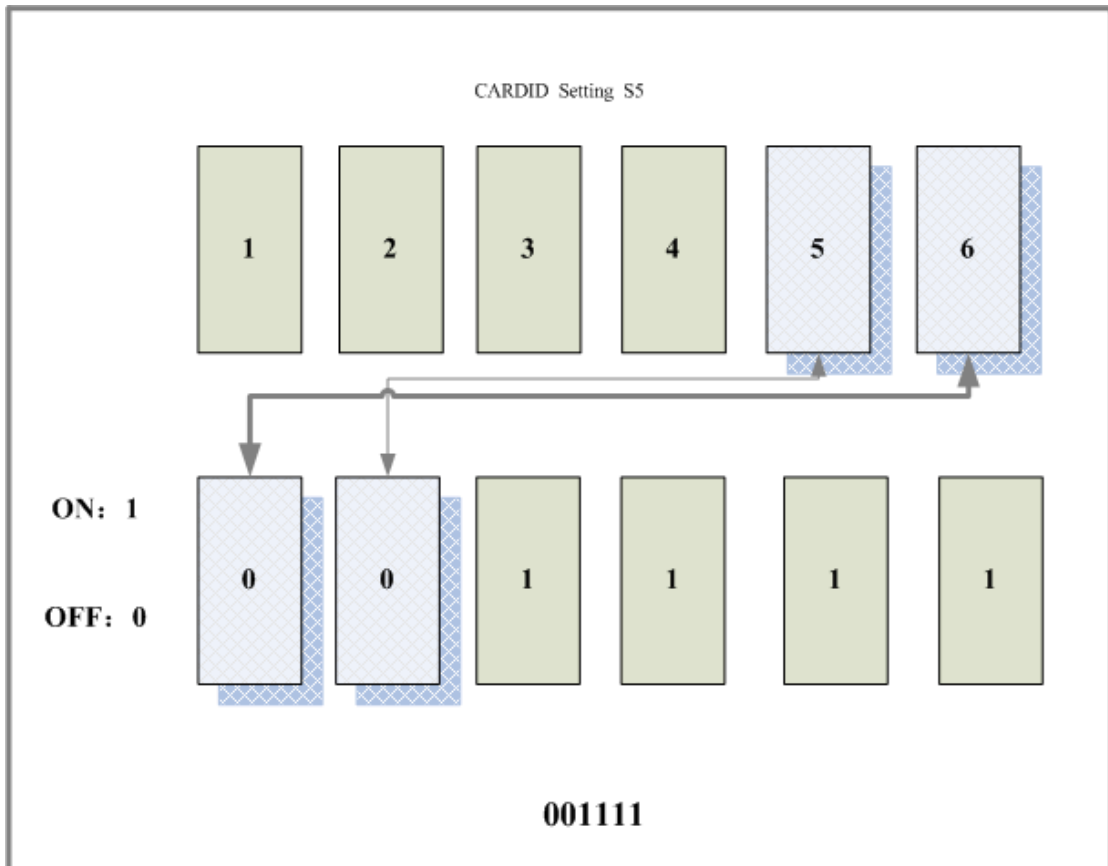


Figure 7: Cardid\_setting

### How to check the pin assignment for RJ-45?

To connect with ISDN equipments, RJ-45 is used to make connection. User should know about RJ-45 standard. Here, figure 9 and figure 10 show cables and jacks for B800P.



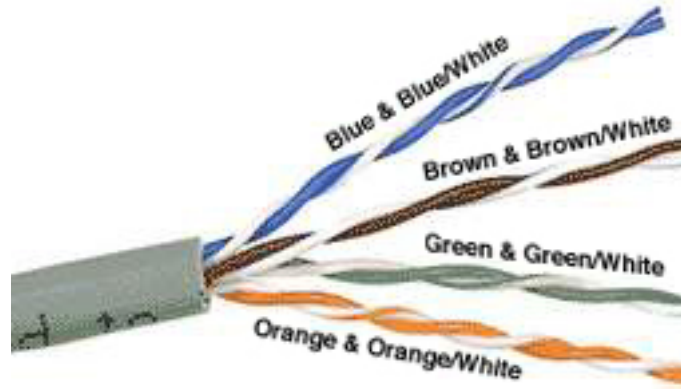


Figure 9: Cable

(Source: [http://www.ertyu.org/steven\\_nikkel/images/tpcable.jpg](http://www.ertyu.org/steven_nikkel/images/tpcable.jpg))

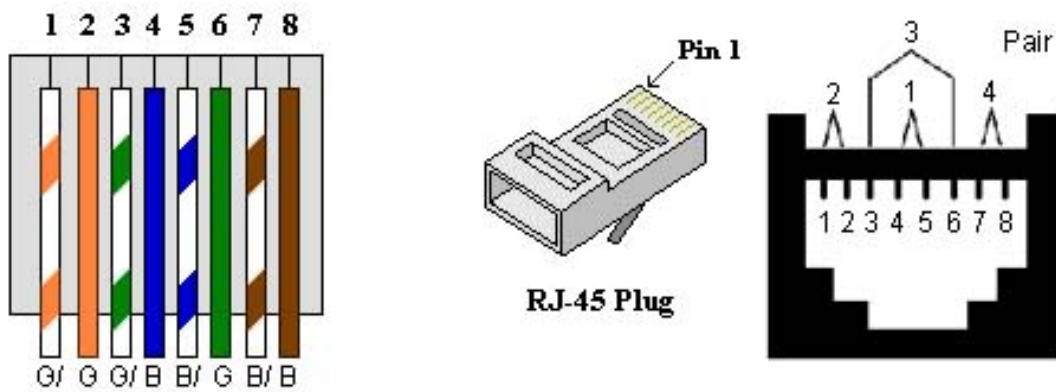


Figure 10: Cable\_RJ45

(Source: [http://www.prsol.com/images/cpd/ethernet\\_568b.jpg](http://www.prsol.com/images/cpd/ethernet_568b.jpg))

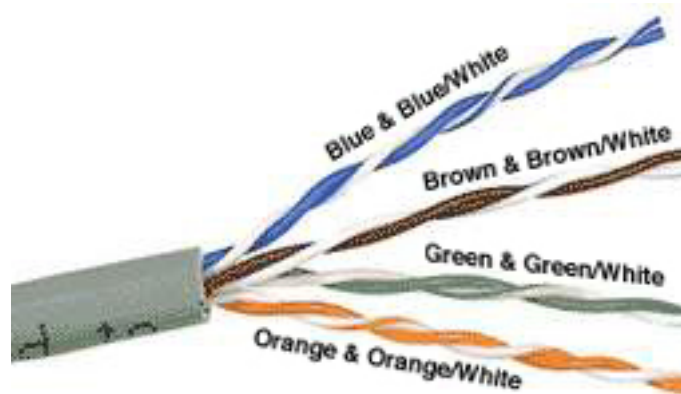


Figure 9: Cable

(Source: [http://www.ertyu.org/steven\\_nikkel/images/tpcable.jpg](http://www.ertyu.org/steven_nikkel/images/tpcable.jpg))

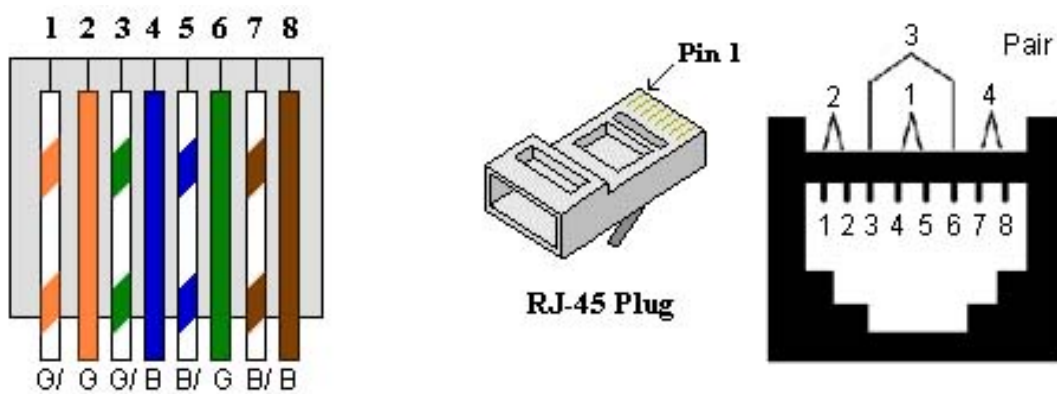


Figure 10: Cable\_RJ45

(Source: [http://www.prsol.com/images/cpd/ethernet\\_568b.jpg](http://www.prsol.com/images/cpd/ethernet_568b.jpg))

## How to monitor the LEDs of B800P?

The style of LEDs of B800P is different with B200P/B400P. If the system loads zaptel, qozap and Asterisk® successfully, in B200P/B400P, the LEDs will start blinking, but in B800P, it will not turn to be active. until ISDN cable plug into ports, the LEDs will be turned into green.

## Chapter 4 References

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

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

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

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

<http://www.junghanns.net/de/download.html>

[http://www.ertyu.org/steven\\_nikkel/images/tpcable.jpg](http://www.ertyu.org/steven_nikkel/images/tpcable.jpg)

[http://www.prsol.com/images/cpd/ethernet\\_568b.jpg](http://www.prsol.com/images/cpd/ethernet_568b.jpg)

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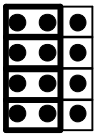
## Chapter 5 Hardware Setting

6693mil

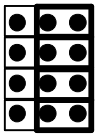
### B800P Jumper Setting

**NT/TE Settings**

Set jumper to the left  
Select NT mode




Set jumper to the right  
Select TE mode




**Termination of S/T Interface (100 ohm)**

Connect: Termination = ON




Open: Termination = Off


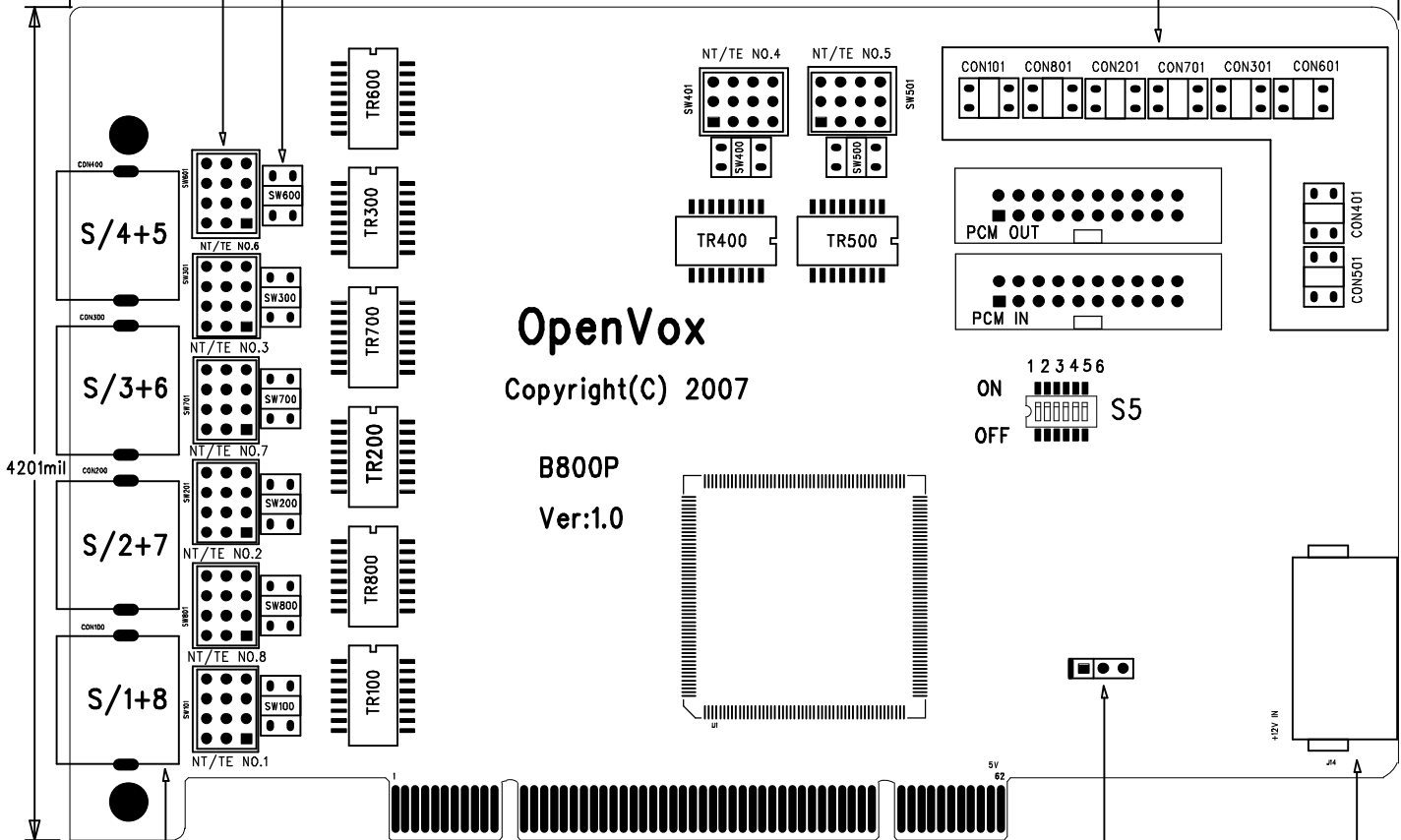


**Power feeding Connector**

Connect: Power feeding to feed  
S/T interfaces enable

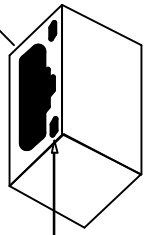


Open: Power feeding to feed  
S/T interfaces disable

**OpenVox**  
Copyright(C) 2007  
B800P  
Ver:1.0

**State Indicator Led**



**Power Supply Selection**

●●● 3.3V supply from the PCI Slot  
(only available in 3.3V PCI Slot)

●●● 3.3V Supply from the Regulator(default)

**Power feeding Input**  
12V Input of Power feeding