



深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards

OpenVox DE210E/DE410E User Manual



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OpenVox-Best Cost Effective Asterisk Cards

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Chapter 1 Overview

1. What is DE410E/DE210E

The DE410E/DE210E is a bundling of our leading D410E/D210E product and our new EC100 Octasic DSP-based echo cancellation module. The EC100 provides a certified carrier-grade algorithm that has been labeled a benchmark for echo cancellation for OpenVox.

With the improved I/O speed, the card reduces CPU usage and increased card density per server. DE410E/DE210E is fully compatible with Asterisk applications. The open source driver supports an API interface for custom application development.

DE410E/DE210E supports industry standard telephony and data protocols, including Primary Rate ISDN (both N. American and Standard Euro) protocol families for voice, PPP, Cisco, HDLC, and Frame Relay data modes. Both line-side and trunk-side interfaces are supported.

About OpenVox EC100 Module

The OpenVox EC100 enables users to eliminate echo tails for DE410E/DE210E up to 128ms or 1024 taps across all 128/64 channels in E1 mode or 96/48 channels in T1/J1 modes. Further, this module takes advantage of the Octasic Voice Quality Enhancement to provide superior sound quality on all calls.

Features:

128ms tail/channel (on all channel densities)

Octasic Music Protection

Adaptive Noise Reduction

Automatic Level Control (G.169)

Field upgradeable algorithm

V.25 / V.8 answer tone (w/ and w/o phase reversal)

DTMF as per Q.24

Support PCI Express 1.0

Be easy to install: Support wct4xxp driver included in original zaptel without any patch

RoHS compliant

Certificates: CE and 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_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).

Chapter 2 Card Installation and Configuration

1. Hardware Installation and Setup

Before inserting the card in to PC, customer should set the jumpers correctly. If customers can not sure the difference of the PCI and PCI Express, please check that from below:

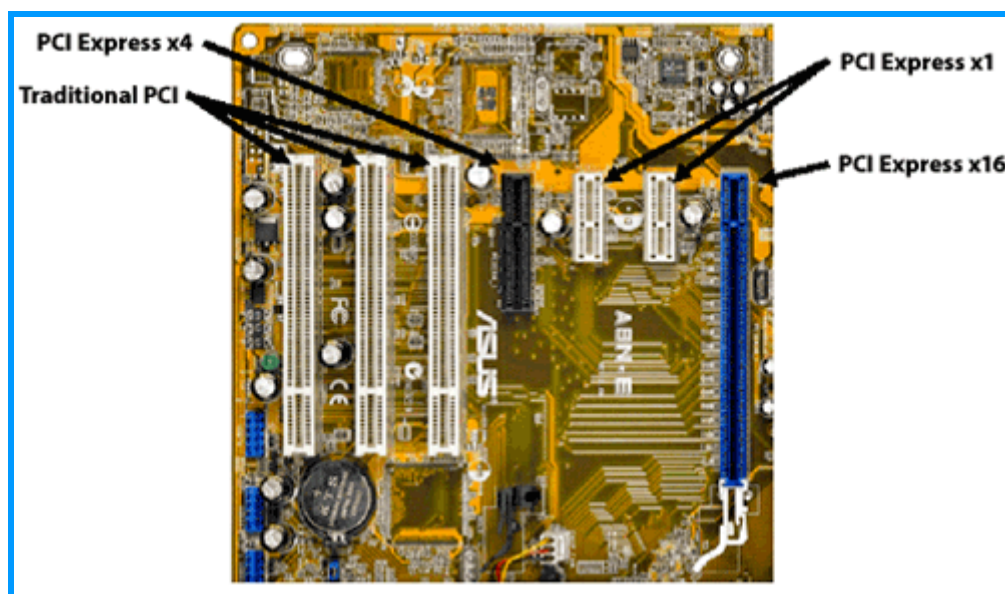


Figure 2 Motherboard

(Source: <http://www.geeks.com/techtips/2006/Images/motherboard.gif>)

There are three steps that customers should check:

- 1) SPAN Type Setup
DIP Switch S5 controls the function of each span at E1 or T1 mode. for more detail, please check the switch on the board.
- 2) CardID: if customers only have one DE410P/DE210P/DE210E/DE410E card in pc PCI express slot, customers should set SW1 to 0, otherwise set to SW1 of each card to different values, and it must start from 0 to card number -1.
- 3) Timing cable: If you want to use the timing cable (D210E/D410E ver1.2 or higher version) with pri cards, please make sure the timing cable is plugged into output on D210E/D410E, and timing cable is connected into the input on other card, you can refer more detail in this link:
<http://bbs.openvox.cn/viewthread.php?tid=874&extra=page%3D>

2. Software Installation and Setup

DE410E/DE210E supports original zaptel wct4xxp driver. Customers can download zaptel driver from asterisk.org. There are few steps to install wct4xxp drivers. In this manual, we will use **DE410E** as an example.

- 1) Checking the DE410P hardware by command: `lspci -v`

```
02:03.0 Communication controller: Digium, Inc. Wildcard TE410P Quad-Span toggleable E1/T1/J1 card 3.3v (rev 02)
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: 32
Interrupt: pin A routed to IRQ 177
Region 0: Memory at f7004000 (32-bit, non-prefetchable) [size=128]
```

- 2) Downloading and compiling

Before installing libpri, zaptel and asterisk, make sure that all supporting packages have been installed in system.

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

It is time to check for 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 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++
```

Here, assuming the three packages are stored in /usr/src directory. Customers compile those packages as following in order:

1. Installing libpri:

```
cd /usr/src/libpri-1.4.3
make clean
make
make install
```

2. Installing zaptel

```
cd /usr/src/zaptel-1.4.8
make clean
make
make install
```

3. Installing asterisk

```
cd /usr/src/asterisk-1.4.8
make clean
make
make install
make samples
```

3) Configuration for zaptel.conf and zapata.conf

User can run the command: `./genzaptelconf -sdvM` under /usr/src/zaptel-1.4.8/xpp/utils to generate zaptel.conf and Zapata.conf or modify the zaptel.conf by `vi /etc/zaptel.conf` manually:

```
# Span 1: TE4/0/1 "T4XXP (PCI) Card 0 Span 1"
span=1, 1, 1, ccs, hdb3
# termtype: te
bchan=1-15, 17-31
dchan=16
# Span 2: TE4/0/2 "T4XXP (PCI) Card 0 Span 2"
span=2, 2, 1, ccs, hdb3
# termtype: te
bchan=32-46, 48-62
dchan=47
# Span 3: TE4/0/3 "T4XXP (PCI) Card 0 Span 3"
span=3, 3, 1, ccs, hdb3
# termtype: te
bchan=63-77, 79-93
dchan=78
span=4, 4, 1, ccs, hdb3
```



```
bchan=94-108,110-124
dchan=109
loadzone = us
defaultzone = us
```

- 4) Edit the zapata.conf by vi /etc/asterisk/zapata.conf:

```
[channels]
context=from-pstn
switchtype=euroisdn
pridialplan=national
signalling=pri_cpe
usecallerid=yes
hidecallerid=no
callwaiting=yes
callwaitingcallerid=yes
threewaycalling=yes
transfer=yes
cancallforward=yes
echocancel=yes
rxgain=0.0
txgain=0.0
group=1
callgroup=1
pickupgroup=1
immediate=no
callprogress=no
callerid=asreceived
group=1
signalling=pri_cpe
channel => 1-15,17-31
group=2
signalling=pri_cpe
channel => 32-46,48-62
group=3
signalling=pri_cpe
channel => 63-77,79-93
group=4
signalling=pri_cpe
channel => 94-108,110-124
```

5) Loading wct4xxp driver for DE410E/DE210E:

```
modprobe zaptel
modprobe wct4xxp
ztcfg -vvvvvvv
```

```
[root@new-host-4 src]# ztcfg -vvvvvvv
Zaptel Configuration
=====
SPAN 1: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 2: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 3: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
SPAN 4: CCS/HDB3 Build-out: 133-266 feet (DSX-1)
Channel map:
Channel 01: Clear channel (Default) (Slaves: 01)
Channel 02: Clear channel (Default) (Slaves: 02)
Channel 03: Clear channel (Default) (Slaves: 03)
Channel 04: Clear channel (Default) (Slaves: 04)
Channel 05: Clear channel (Default) (Slaves: 05)
Channel 06: Clear channel (Default) (Slaves: 06)
Channel 07: Clear channel (Default) (Slaves: 07)
Channel 08: Clear channel (Default) (Slaves: 08)
Channel 09: Clear channel (Default) (Slaves: 09)
Channel 10: Clear channel (Default) (Slaves: 10)
```

**List the part
of channels**

`dmesg` command shows the card information and drivers.

```
Reg 5: 0xe5000014
Reg 6: 0xc01a0000
Reg 7: 0x00001f00
Reg 8: 0x00000000
Reg 9: 0x00000000
Reg 10: 0xe5000028
TE4XXP: Launching card: 0
TE4XXP: Setting up global serial parameters
Found a Wildcard: Wildcard TE410P (2nd Gen)
Registered Tormenta2 PCI
Unregistered Tormenta2
Specify address with base=0xNNNNN
usbcore: registered new driver wusb
Wildcard USB FXS Interface driver registered
usbcore: deregistering driver wusb
INFO-xpp: revision trunk-r5744 MAX_XPDS=64 (8*8)
INFO-xpp: FEATURE: without BRISTUFF support
INFO-xpp: FEATURE: with PROTOCOL_DEBUG
INFO-xpp: FEATURE: with ECHO_SUPPRESSION
INFO-xpp: FEATURE: without XPP_EC_CHUNK
INFO-xpp: FEATURE: with sync_tick() from ZAPTEL
INFO-xpp_usb: revision trunk-r5744
usbcore: registered new driver xpp_usb
usbcore: deregistering driver xpp_usb
About to enter spanconfig!
Done with spanconfig!
About to enter spanconfig!
Done with spanconfig!
About to enter spanconfig!
Done with spanconfig!
About to enter spanconfig!
Done with spanconfig!
Registered tone zone 0 (United States / North America)
About to enter startup!
TE4XXP: Span 1 configured for CCS/HDB3/CRC4
wct4xpp: Setting yellow alarm on span 1
timing source auto card 0!
SPAN 1: Primary Sync Source
JPM400: Not Present
JPM450: echo cancellation for 128 channels
JPM450: hardware DTMF disabled.
JPM450: Present and operational servicing 4 span(s)
Completed startup!
About to enter startup!
TE4XXP: Span 2 configured for CCS/HDB3/CRC4
wct4xpp: Setting yellow alarm on span 2
timing source auto card 0!
SPAN 2: Secondary Sync Source
Completed startup!
```

6) Starting asterisk by `asterisk -vvvvvvgc` and run: `zap show channels`:

```
new-host*CLI> zap show channels
  Chan Extension  Context          Language  MOH Interpret
pseudo
  1              from-pstn        default
  2              from-pstn        default
  3              from-pstn        default
  4              from-pstn        default
  5              from-pstn        default
  6              from-pstn        default
  7              from-pstn        default
  8              from-pstn        default
  9              from-pstn        default
 10             from-pstn        default
 11             from-pstn        default
 12             from-pstn        default
 13             from-pstn        default
 14             from-pstn        default
 15             from-pstn        default
 17             from-pstn        default
```

Notes:

Test environments:

OS: Centos 5

Hardware: OpenVox DE410E

Drivers: asterisk-1.4.8 and zaptel-1.4.8

No need to adjust Power Supply (3.3 V and 5V) for DE210E/DE410E

This manual is workable for DE210E

Chapter 3 References

www.openvox.com.cn

www.digium.com

www.asterisk.org

www.voip-info.org

www.asteriskguru.com

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Chapter 4 Hardware Setting

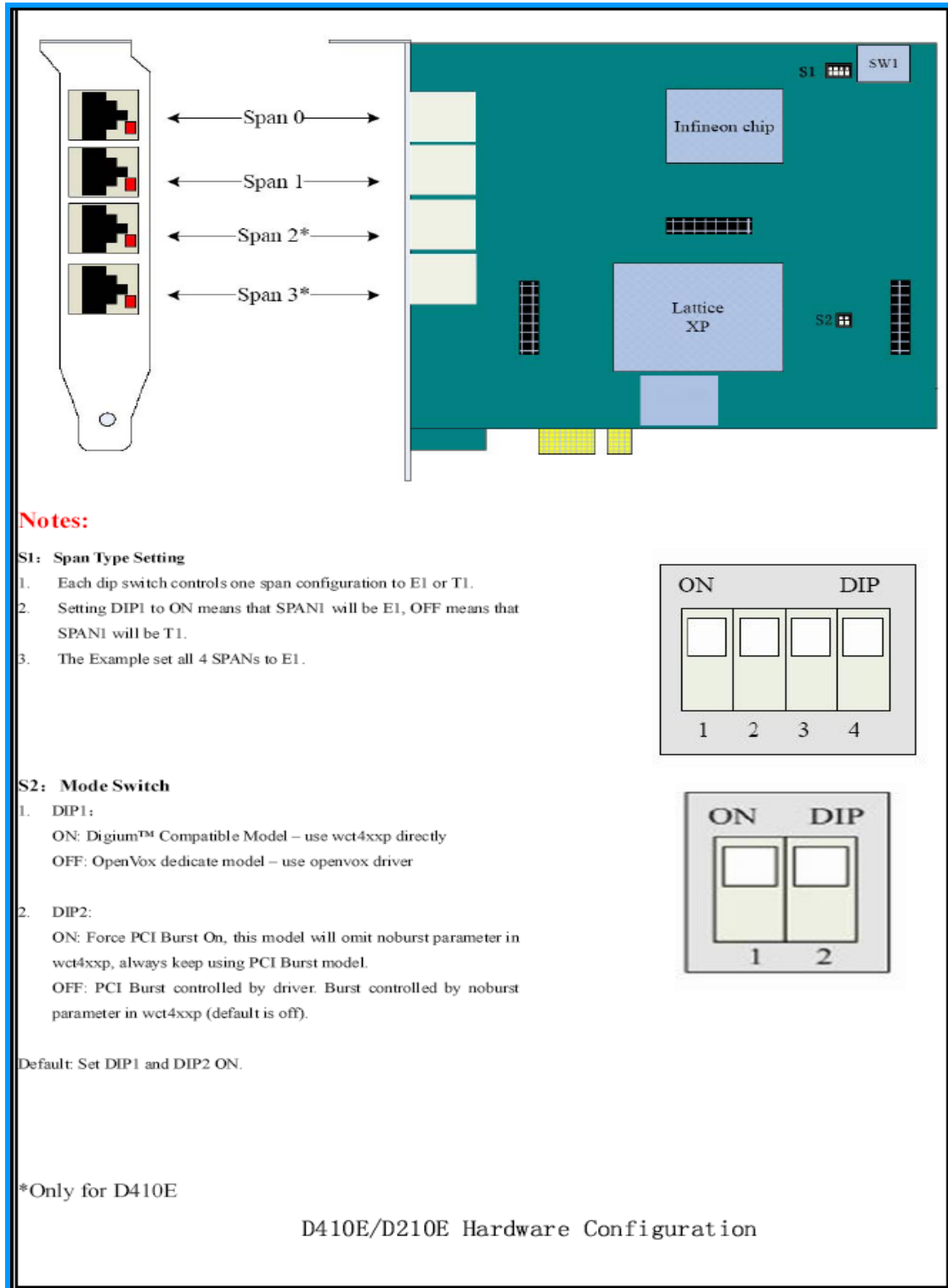


Figure 3 DE410E/DE210E Hardware Configurations

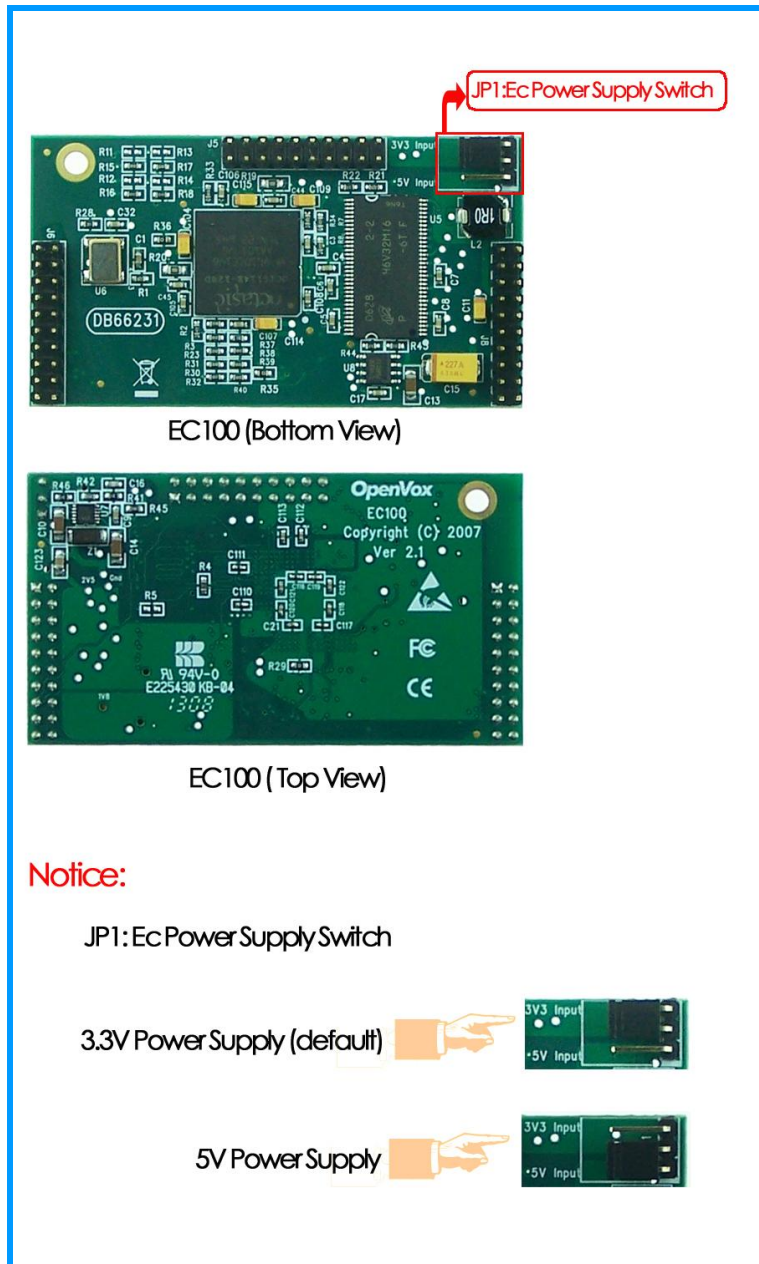


Figure 4 EC100 Power Supply Setting
(Only for DE210P/DE410P)