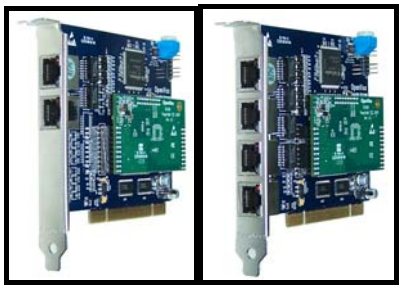
深圳开源通信有限公司

OpenVox-Best Cost Effective Asterisk Cards

OpenVox DE210P/DE410P User Manual



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Chapter 1 Overview

1. What is DE410P/DE210P

The DE410P/DE210P is a bundling of our leading D410P/D210P 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. DE410P/DE210P is fully compatible with Asterisk applications. The open source driver supports an API interface for custom application development.

DE410P/DE210P 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 DE410P/DE210P 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
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.

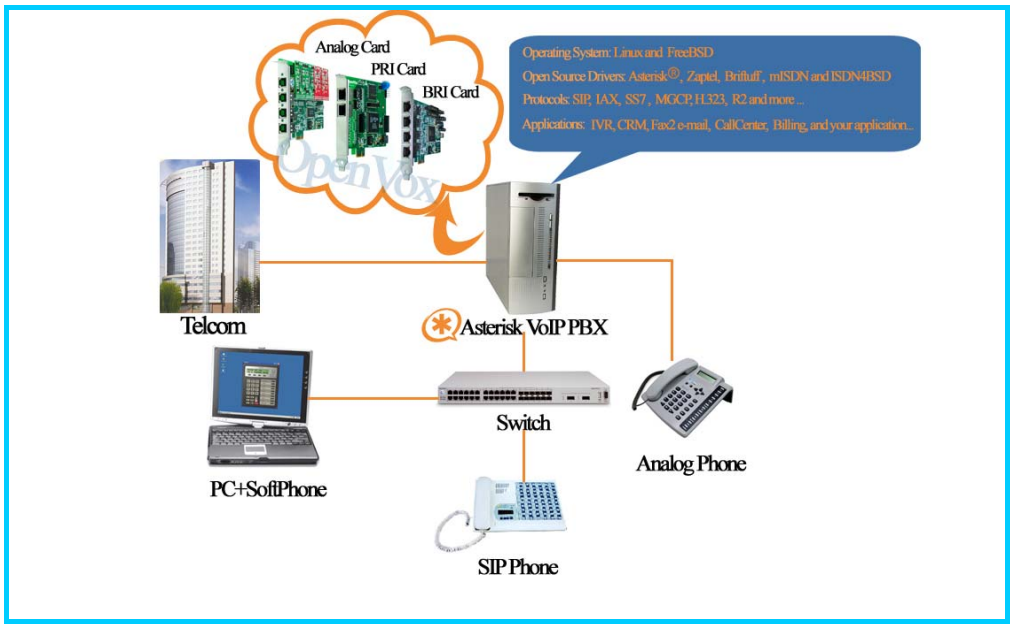

Figure 1: Asterisk_OpenVox Setup

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:

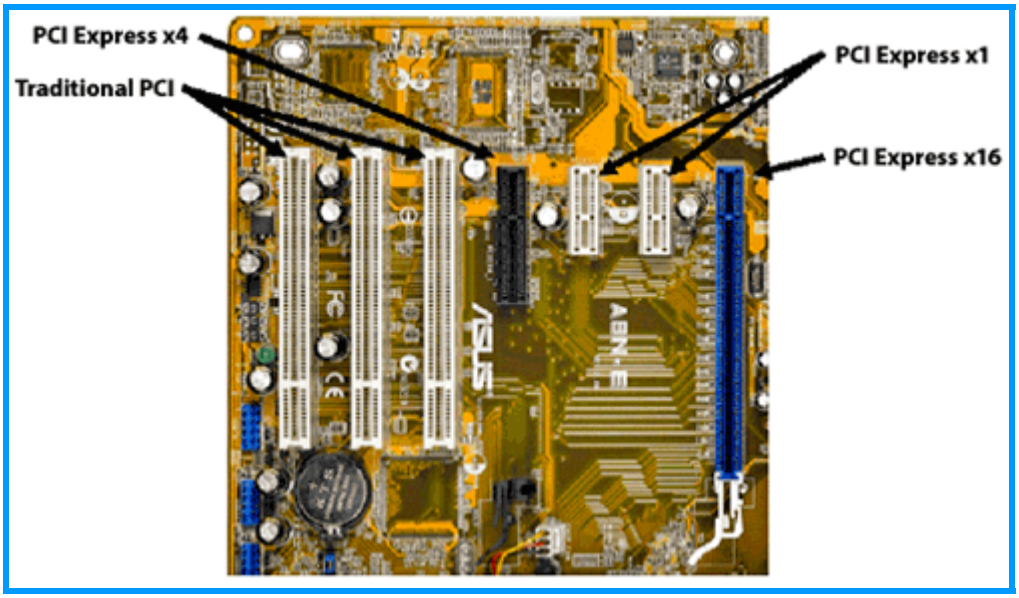

Figure 2 Motherboard

(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) Adjust Power supply for 3.3 V and 5 V, please take a particular attention to that. The default value is 3.3 V, if you want to set 5 V, please adjust the jumper J7 on the main board and JP1 on EC100 accordingly. For more information, please check the setting in chapter 4.

2. Software Installation and Setup

DE410P/DE210P 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 **DE410P** as an example.

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

```
02:03.0 Communication controller: Digium, Inc. Wildcard TE410P Quad-Span togglable 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 DE410P/DE210P:

modprobe zaptel

modprobe wct4xxp

ztcfg -vvvvvvvv

```
[root@new-host-4 src]# ztcfg -vvvvvv

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.

```
Zapata Telephony Interface Registered on major 196
Zaptel Version: 1.4.8
Zaptel Echo Canceller: MG2
ACPI: PCI Interrupt 0000:02:03.0[A] -> GSI 16 (level, low) -> IRQ 177
Found TE4XXP at base address f7004000, remapped to f88b6000
TE4XXP version c01a0000, burst OFF
FALC version: 00000005, Board ID: 00
```

6) Starting asterisk by **asterisk -vvvvvvvgc** and run: **zap show channels:**

```
new-host*CLI> zap show channels
   Chan Extension  Context         Language   MOH Interpret
pseudo             default                    default
     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 DE410P

Drivers: asterisk-1.4.8 and zaptel-1.4.8

This manual is workable for DE210P

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

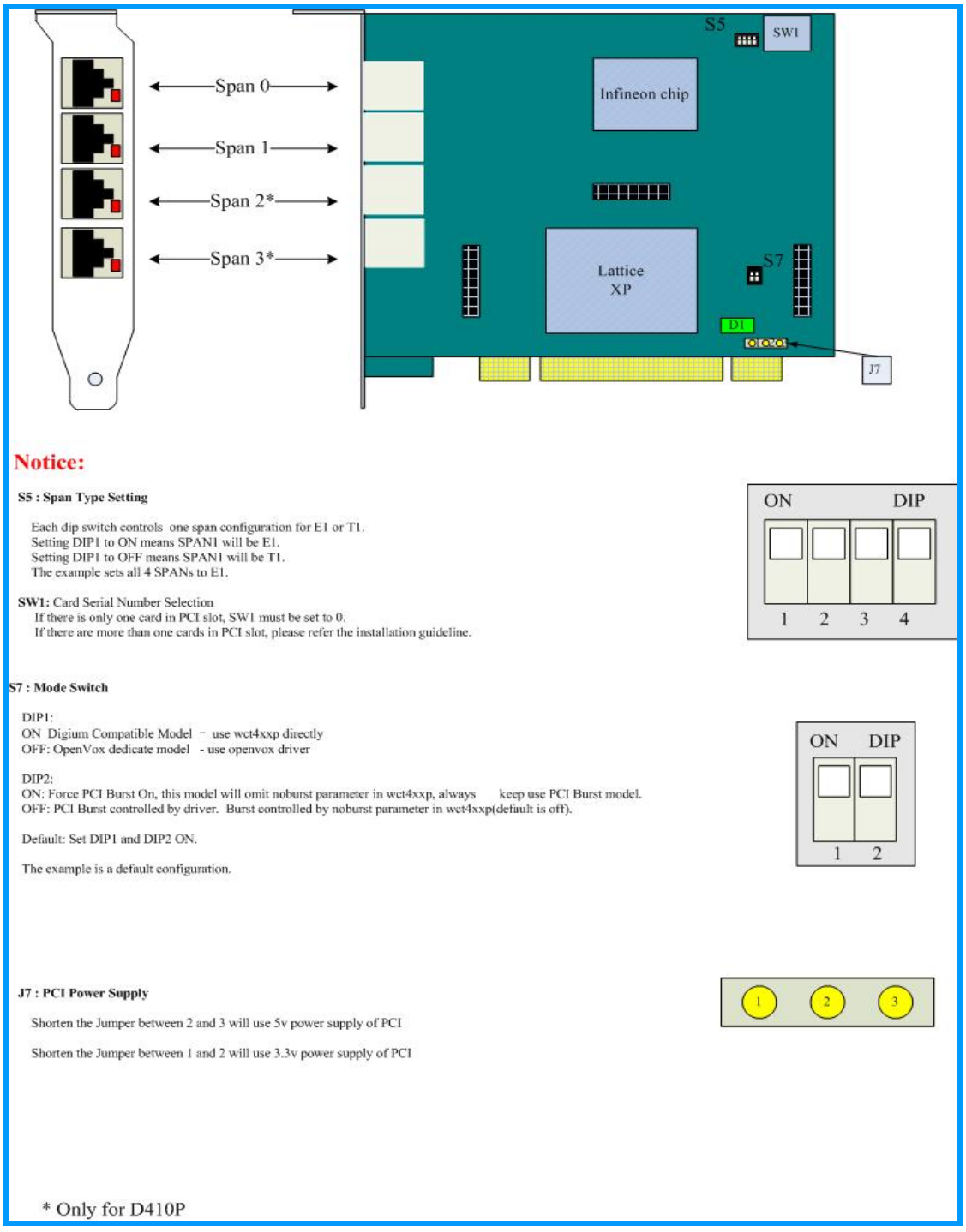

Figure 3 DE410P/DE210P Hardware Configuration

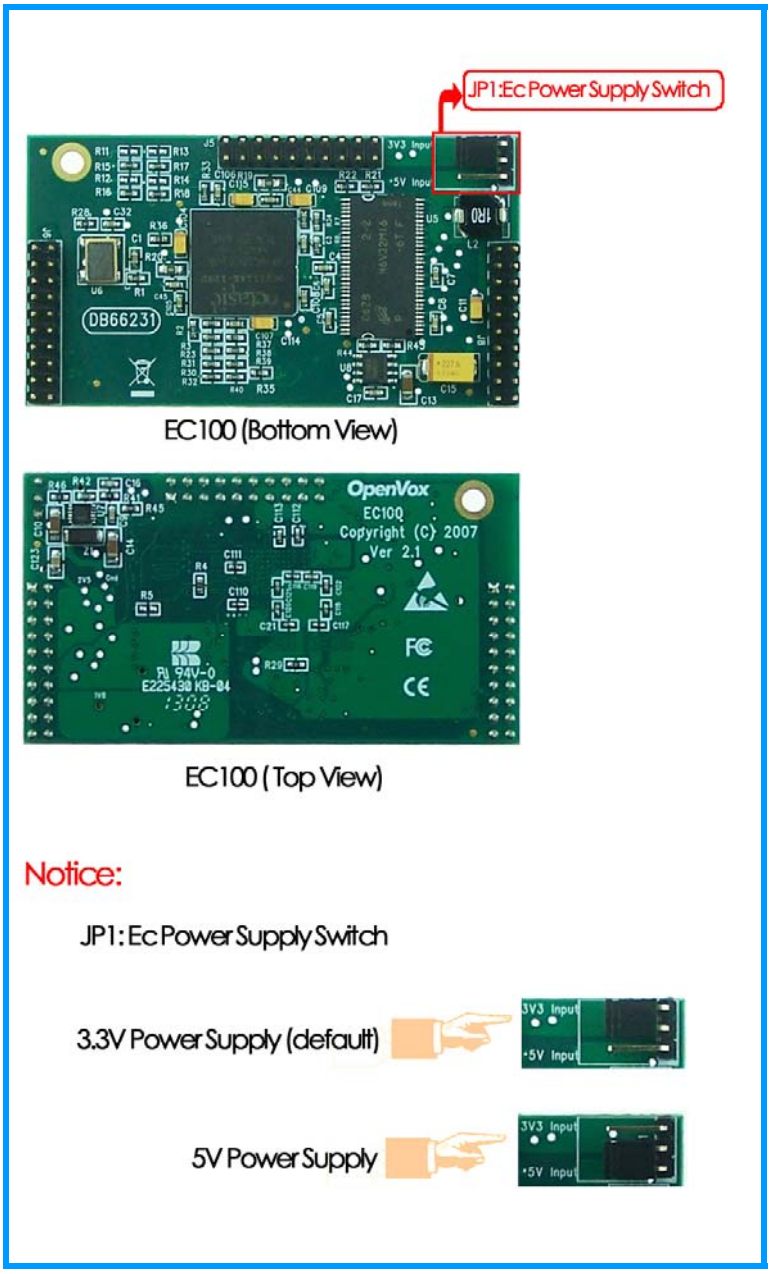

Figure 4 EC100 Power Supply Setting