

Figure: AX-1E

## **ATCOM® Digital Card AX-1E**

### **Product Guide**

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## Contact ATCOM

### The Introduction of ATCOM

Founded in 1998, ATCOM technology has been always endeavoring in the R&D and manufacturing of the internet communication terminals. The product line of ATCOM includes IP Phone, USB Phone, IP PBX, VoIP gateway and Asterisk Card.

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Website address: <http://www.atcom.cn/>

ATCOM Wiki Website: [http://www.openippbx.org/index.php?title=Main\\_Page](http://www.openippbx.org/index.php?title=Main_Page)

Download Center: <http://www.atcom.cn/download.html>

# Chapter 1 the Introduction of AX-1E

## Overview of the AX-1E

AX-1E Asterisk card is the telephony PCI card that supports one ISDN PRI E1 port. Using AX-1E digital PRI card, open source Asterisk PBX and stand alone PC, users can create their IP PBX telephony solution which includes all the sophisticated features of traditional PBX and extended features such as voicemail in IP PBX.

## Features

- One ISDN PRI E1 port 30 channels
- Hardware DTMF detection
- Conference Bridge
- PRI ISDN protocol stack
- Suitable for 3.3 volts and 5.0 volts 32 bit PCI 2.2 slots

## Applications

- ISDN PRI IP PBX
- ISDN least cost router
- Voice over IP PRI termination gateways
- IVR system
- Call Center
- Traditional Calls/VoIP Calls Conference
- Callback Service

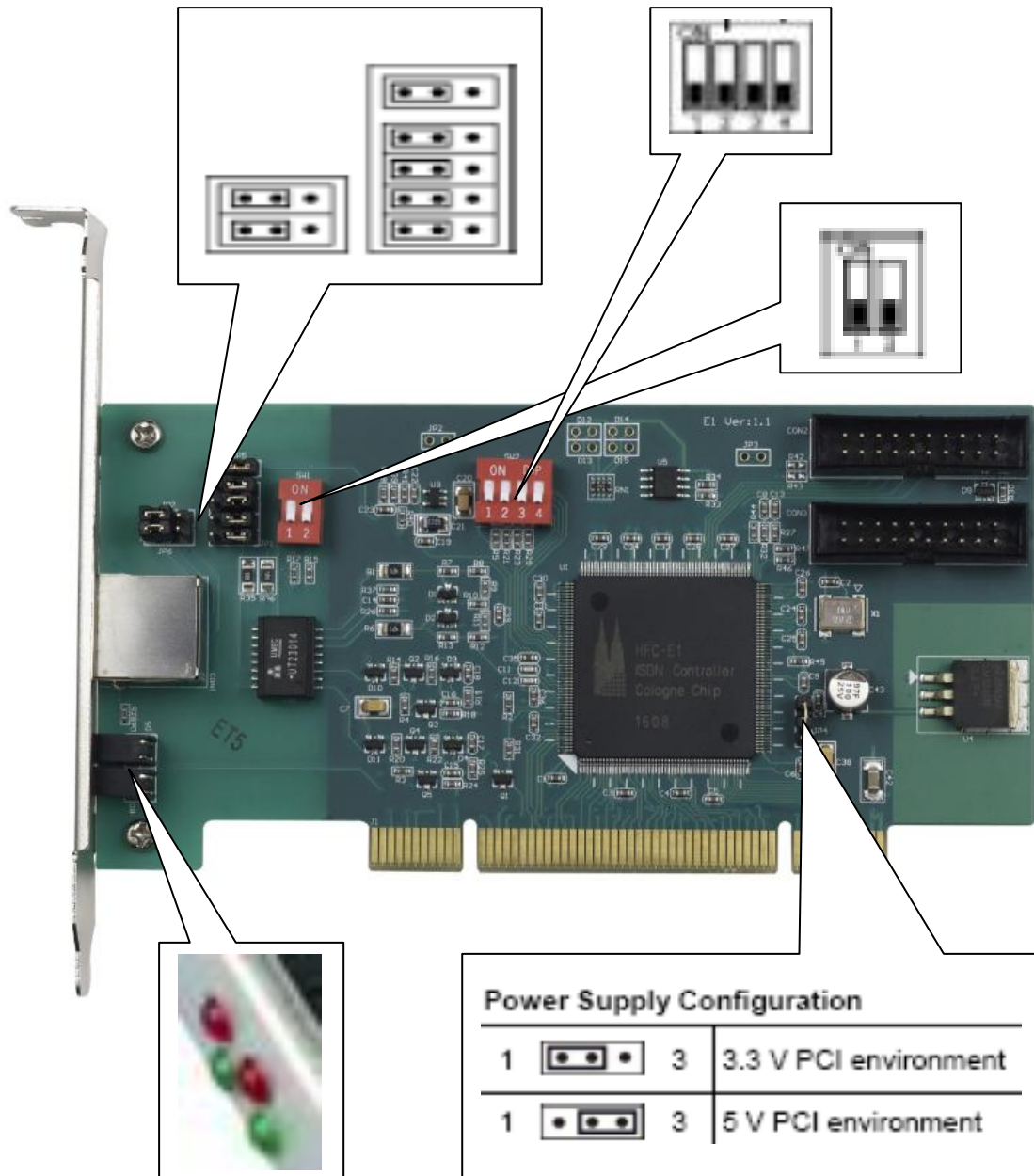
## Hardware requirement

- 1.6-GHz Pentium IV
- 512 MB RAM
- 3.3V or 5V PCI 2.2 slot

## PCI card dimension:

72mm (height) × 144mm (Length)

## Chapter 2 Hardware Setting



Once the jumpers on the card are set like the illustration above, no matter what kind of mode (NT or TE) does the card work in, customer do not need to reset jumpers. To make the port work in different mode (NT or TE), customer just need to edit one line in configuration file, for the detail step, please go to page 7.

LEDs: If the port is connected to E1 cable successfully, one of the red LED will be red stable, once the channel is busy (during communication), both of the two red LEDs will be red stable. Please do not care about the other two green LEDs.

## Chapter 3 Software Installation

### Test Environment:

asterisk-1.4.29  
mISDN-1\_1\_9.1  
mISDNuser-1\_1\_9.1  
Centos 5.4

After insert the card into your PCI slot and boot your server, please use the “lspci” command to check the PCI bus compatibility. The correct output will like the following:

```
-----  
04:00.0 ISDN controller: Cologne Chip Designs GmbH ISDN network Controller [HFC-E1] (rev  
01)  
-----
```

A **Cologne Chip** device will be found, if you can not see the Cologne Chip device, please poweroff your server and try another PCI slot, if it still does not help, you have to check the compatibility issue between the card and your PCI bus.

1. To install asterisk and mISDN in centos OS, user has to install the following prerequisite packages:

bison bison-devel zlib zlib-devel openssl openssl-devel gnutls-devel flex gcc gcc-c++  
Please use the yum install command to install the packages above.

2. Download asterisk,mISDN and mISDNuser

```
[root@localhost src]#  
wget http://downloads.asterisk.org/pub/telephony/asterisk/releases/asterisk-xx  
[root@localhost src]# wget http://www.misdn.org/downloads/mISDN.tar.gz  
[root@localhost src]# wget http://www.misdn.org/downloads/mISDNuser.tar.gz
```

3. Install asterisk,mISDN and mISDNuser

Install mISDN

- 1) [root@localhost src]# tar -xvzf mISDN.tar.gz
- 2) [root@localhost src]# cd mISDN-1\_1\_9.1/
- 3) [root@localhost mISDN-1\_1\_9.1]# make
- 4) [root@localhost mISDN-1\_1\_9.1]# make install

Install mISDNuser

- 1) [root@localhost src]# tar -xvzf mISDNuser.tar.gz
- 2) [root@localhost src]# cd mISDNuser-1\_1\_9.1/
- 3) [root@localhost mISDNuser-1\_1\_9.1]# make
- 4) [root@localhost mISDNuser-1\_1\_9.1]# make install

#### Install asterisk

- 1) [root@localhost src]# tar -xvzf asterisk-1.4.29.tar.gz
- 2) [root@localhost src]# cd asterisk-1.4.29
- 3) [root@localhost asterisk-1.4.29]# ./configure
- 4) [root@localhost asterisk-1.4.29]# make
- 5) [root@localhost asterisk-1.4.29]# make install
- 6) [root@localhost asterisk-1.4.29]# make samples

## Chapter 4 Software Configuration

1. Please add the following lines in the end of file `/etc/modprobe.d/blacklist`  
blacklist hisax  
blacklist hisax\_fcpci  
blacklist hisax\_isac  
blacklist crc\_ccitt  
blacklist isdn  
blacklist slhc  
blacklist capi  
blacklist capifs  
blacklist kernelcapi  
blacklist kernel\_capi  
blacklist avmfritz  
blacklist hfc4s8s\_11
2. Please run `misdn-init scan`  
`[root@localhost etc]# misdn-init scan`  
The correct output will like the following:  
[OK] found the following devices:  
card=1,0x1  
[ii] run `"/usr/sbin/misdn-init config"` to store this information to `/etc/misdn-init.conf`
3. Please run `misdn-init config`  
`[root@localhost etc]# misdn-init config`  
The correct output will like the following:  
[OK] `/etc/misdn-init.conf` already present, backing it up to `/etc/misdn-init.conf.save`  
[OK] `/etc/misdn-init.conf` created. It's now safe to run `"/usr/sbin/misdn-init start"`  
[ii] make your port (1) available in asterisk by editing `"/etc/asterisk/misdn.conf"`
4. The port of AX-1E works in TE mode by default setting, customer can change it to work in NT mode by editing file `/etc/misdn-init.conf`, find one line `"te_ptmp=1"`, then change it to `"nt_ptmp=1"`, after this, please run `misdn-init restart` to make the setting effect.



5. Please run misdn-init start

```
[root@localhost etc]# misdn-init start
```

The correct output will like the following:

```
-----  
Loading module(s) for your misdn-cards:  
-----
```

```
/sbin/modprobe --ignore-install hfcmulti type=0x1 protocol=0x2 layermask=0xf poll=128  
debug=0
```

```
/sbin/modprobe mISDN_dsp debug=0x0 options=0 poll=128 dtmfthreshold=100
```

6. To check if the driver of AX-1E is loaded successfully, please run `cat /proc/interrupts`, getting one line with HFC-multi, and the number of interrupt increases after running `cat /proc/interrupts` again, it proves that the driver of AX-1E is loaded successfully.

```
50:    2749    2269    0    354  IO-APIC-level  uhci_hcd:usb4, HFC-multi
```

7. Please start asterisk

```
asterisk -vvvvvvgc
```

```
reload
```

8. Please run command `misdn show stacks`

the correct output will like the follow:

```
*CLI> misdn show stacks
```

```
BEGIN STACK_LIST:
```

```
* Port 1 Type TE Prot. PTP L2Link DOWN L1Link: DOWN Blocked:0  Debug:0
```

If the port is connected to E1 cable correctly, the correct output will like the following:

```
*CLI> misdn show stacks
```

```
BEGIN STACK_LIST:
```

```
* Port 1 Type TE Prot. PTP L2Link UP L1Link: UP Blocked:0  Debug:0
```

## Chapter 5 Testing

1. Please edit misdn.conf file

```
[root@localhost asterisk]# vi misdn.conf
```

Please disable all the default ports, and add the following paragraph at the end of this file:

```
[from-internal]
```

```
ports=1
```

```
context=from-internal
```

2. Please configure dial-plan in extensions.conf

add a dial-plan like the following:

```
[from-internal]
```

```
exten=>111,1,Dial(misdn/1/111)
```

```
exten=>111,2,Hangup()
```

3. Please plug the E1 cable into the port, then one of the LEDs turns to red stable.

4. Please start asterisk

```
asterisk -vvvvvvvvgc
```

```
reload
```

5. Please run command misdn show stacks

Then it shows the following information:

```
*CLI> misdn show stacks
```

```
BEGIN STACK_LIST:
```

```
* Port 1 Type TE Prot. PTP L2Link UP L1Link: UP Blocked:0 Debug:0
```

From the output above, both of the L1 and L2 are in up status. It proves that the cable connection is correct.

6. Please use a registered sip phone to call 111, then two of the LEDs turn to red stable, it shows the following information:

```
*CLI> -- Executing [111@from-internal:1] Dial("SIP/500-00000002", "misdn/1/111")  
in new stack
```

```
-- Called 1/111
```

```
-- mISDN/1-u8 is proceeding passing it to SIP/500-00000002
```

```
-- mISDN/1-u8 answered SIP/500-00000002
```

## Chapter 6 Reference

[http://www.misdn.org/index.php/Main\\_Page](http://www.misdn.org/index.php/Main_Page)

<http://www.asteriskguru.com/>

<http://www.asterisk.org/downloads>

[http://www.openippbx.org/index.php?title=Main\\_Page](http://www.openippbx.org/index.php?title=Main_Page)

<http://www.atcom.cn/>