



Synway CDC Series

CDC-1522A/PCI

CDC-2522A/PCI

CDC-3522A/PCI

User Manual

Version 1.0

Synway Information Engineering Co., Ltd

www.synway.net

Contents

Contents	i
Copyright Declaration	ii
Software License Agreement	iii
Revision History	iv
Preface	v
Chapter 1 Overview	1
1.1 What is Asterisk.....	1
Chapter 2 Board Installation	3
2.1 Hardware Installation.....	5
2.2 Software Installation	5
2.2.1 <i>System Requirements</i>	5
2.2.2 <i>Installation Package</i>	5
2.2.3 <i>Driver Installation</i>	6
2.2.4 <i>Driver Uninstallation</i>	7
Appendix A Technical Specifications	8
Appendix B Technical/Sales Support	9

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Revision History

Version	Date	Comments
Version 1.0	2008-7	Initial publication

Note: Only major revisions to this manual itself recorded herein.

Preface

Thank you for choosing the Synway AST series boards which are designed to fully support Asterisk platform. This series includes four subseries.

Subseries	Description
Synway FXM	Use of modular structure and analog lines
Synway FXS	Use of analog lines, equipped with much more on-board channels than FXM.
Synway TEJ	Use of digital trunks (E1/T1/J1)
Synway CDC	CODEC board

The Synway CDC series board is a perfect substitute for the TC400B product from Digium Inc., providing codec translations in hardware.

This manual, as the help file for both hardware and software installations of the Synway CDC series, aims at those installation and maintenance technicians as well as the salesmen who are using the CDC boards.

This document consists of the following chapters.

Chapter 1 introduces the functions and features of the Synway CDC series boards and tells what is Asterisk.

Chapter 2 elaborates how to install boards on PC by examples.

Appendix A gives the technical specifications of the boards.

Appendix B shows the contact way of technical support and sales department in Synway.

Although Synway has scrupulously checked through this manual, but cannot guarantee the absence of errors and omissions. We sincerely apologize for any consequent inconvenience brought to you and will be very grateful if you kindly give your advice regarding amendments to this book.

Chapter 1 Overview

The Synway CDC Series (hereinafter referred to as 'CDC') are multi-channel codec boards with PCI 2.2 bus, supporting the hardware-based transformations between voice codecs. With the burst data transmission rate up to 132 MB/s and the PNP (plug and play) feature which eliminates the need for jumper leads, this series can be used on 3.3V/5V PCI slot and PCI-X slot.

Asterisk, in software and with Digium G.729a licensing, is capable of transforming the G.729a codec into other codecs for the purposes of call origination or termination, bridging disparate calls, or VoIP to TDM connectivity. These transformations in software are very expensive, in terms of MIPS, and require a substantial amount of CPU time to accomplish. The Synway CDC series uses the PCI-based DMA technique for data reading and writing, minimizing the CPU cost. It is fully compatible with the API functions of Asterisk and supports the transformations among G.711 A-Law, μ -Law and G.729A, which ideally cover the shortage of Asterisk. Besides, the CDC board has many DSPs on it to provide powerful voice processing, which brings a nearly real-time voice effect to users.

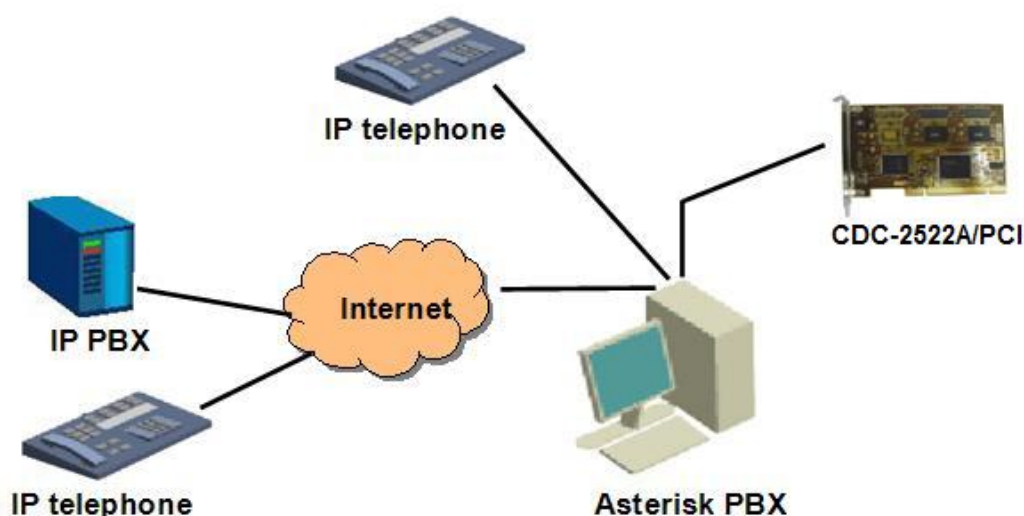


Figure 1-1 Application Example

1.1 What is Asterisk

Asterisk is the first Open Source PBX, which is developed, maintained and improved by Digium Inc. It can run on Linux and other Unix platforms. The name Asterisk is derived from the all-inclusive "wildcard" symbol (*) in UNIX (as well as Linux), a symbol that stands for one or more unspecified characters, used especially in searching text and in selecting multiple files or directories. It implies the wide applicability of this software.

Asterisk provides a lot of functionalities which were supported only by expensive and proprietary PBX before, such as voicemail, conferencing, interactive voice response (IVR) and auto call transfer, etc. Since Asterisk is an open source PBX, users can flexibly configure and extend this platform to have whatever functions needed, even can write programs to develop some functional modules they want. Therefore, Asterisk is now increasingly used to take the place of traditional proprietary PBX.

Chapter 2 Board Installation

When you unpack the board, please check if it is damaged or corrupted during transportation. In case of any loss, take your bill of documents and contact the seller or dial the phone number listed in [Appendix B](#) to consult.

Note: Only the trained and qualified service people are allowed to reinstall the board. Users had better not do it by themselves.

The following table lists all models in the CDC series.

Series	Bus	Board Model	G.729A	Note
CDC	PCI	CDC-1522A/PCI	50	PCI-X support
CDC	PCI	CDC-2522A/PCI	100	PCI-X support
CDC	PCI	CDC-3522A/PCI	150	PCI-X support

The CDC series boards are illustrated below.

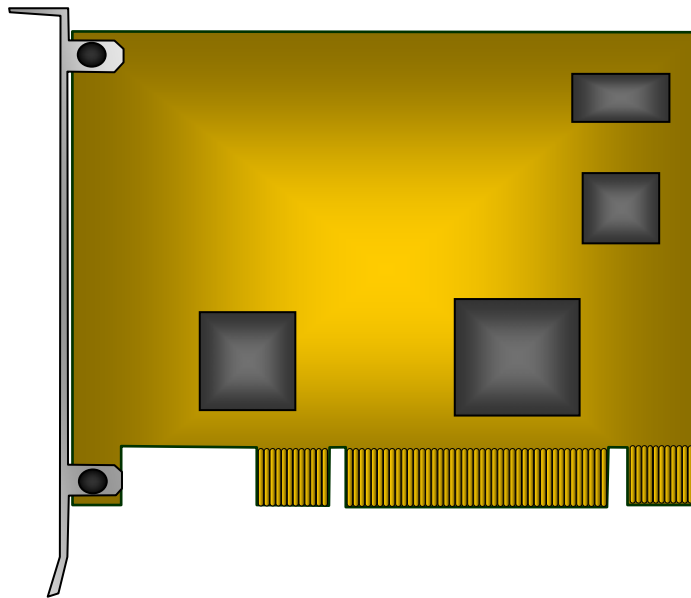


Figure 2-1 CDC-1522A/PCI (Front View)

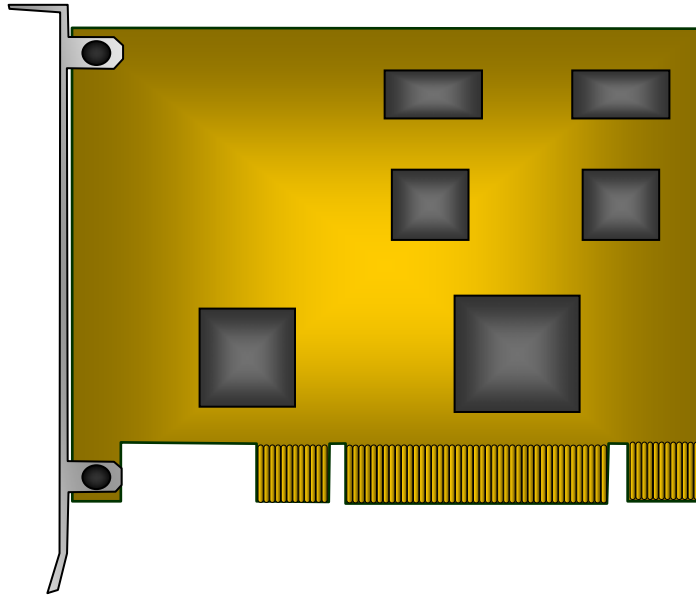


Figure 2-2 CDC-2522A/PCI (Front View)

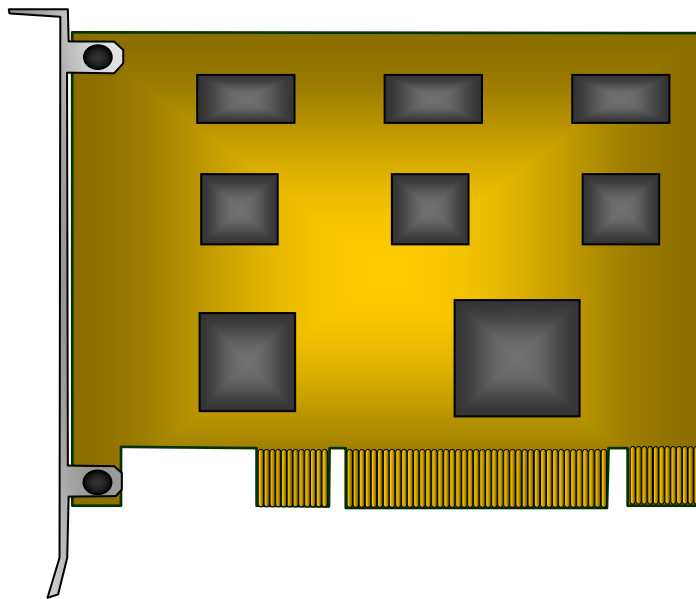


Figure 2-3 CDC-3522A/PCI (Front View)

2.1 Hardware Installation

- Step 1: Turn off the power and open the chassis.
- Step 2: Fit the board into a slot on the PC.
- Step 3: Close and seal the chassis.

2.2 Software Installation

2.2.1 System Requirements

Host System Requirements

CPU: 400MHz Intel® Pentium®III or above

Memory: 512M or more

HD: Depends on individual requirements

Supported Operating Systems

- ✓ Linux RH7.2/RH9.0/AS4/FC4/SUSE10

2.2.2 Installation Package

The driver installation package includes all necessary files for installation and use of the CDC driver. See below for details.

No.	Filename	Description
1	cdc522apci-1.0.0.tar.gz	CDC driver package
2	AST CDC_UserManual.doc	User manual for this driver (English version)
3	AsteriskTFOT.zip	Introduction to installation and configuration of Asterisk (official provision)

Notes:

1. The packages for CDC-3522A/PCI, CDC-2522A/PCI and CDC-1522A/PCI are all called cdc522apci-1.0.0.tar.gz. That is, the driver programs for these three board models are identical.
2. cdc522apci-1.0.0.tar.gz can only be installed with the help of the Zaptel driver and started by running Asterisk.
3. The Zaptel driver must be installed for compilation and operation of this driver.

4. This driver supports the version of zaptel-1.4. So we recommend zaptel1-1.4.8 and Asterisk-1.4.17. for your use, which can be downloaded from the website www.synway.net or <http://downloads.digium.com/pub>.
5. There is no need for you to configure the CDC driver.

2.2.3 Driver Installation

Here we use zaptel-1.4.8 and Asterisk-1.4.17 as an example to explain how to install this driver.

Step 1: Login to the system (users with root access only)

Step 2: Compile and install Zaptel

Copy the zaptel-1.4.8.tar.gz file from the CD to the target directory of /opt.

```
#cd /opt
```

```
#tar -xvf zaptel-1.4.8.tar.gz
```

```
#cd zaptel-1.4.8
```

```
#make
```

```
#make install
```

Copy cdcx522apci-1.0.0.tar.gz to the directory of zaptel-1.4.8.

```
#tar -xvf cdcx522apci-1.0.0.tar.gz
```

```
#cd cdcx522apci-1.0.0
```

```
#make
```

Step 3: Compile and install Asterisk

Copy the file Asterisk-1.4.17.tar.gz from the CD to the target directory of /opt (or some other directory).

```
#cd /opt
```

```
#tar -xvf Asterisk-1.4.17.tar.gz
```

```
#cd Asterisk-1.4.17
```

```
#!/configure
```

```
#make
```

```
#make install
```

Step 4: Load the driver

```
#cd /opt
```

```
#cd zaptel-1.4.8
```

```
#modprobe zaptel
```

```
#modprobe zttranscode
```

```
#cd cdcx522apci-1.0.0
```

```
#insmod shcdc.ko
```

Step 5: Start Asterisk

```
#asterisk -vvvc
```

```
*CLI>show transcoder
```

```
0/0 encoders/decoders of 150 channels are in use.
```

```
*CLI>show translations
```

```
g729 - 3 1 1 3 3 2 5 - - 18 3 -
```

Note: The value written in the format of G.729A is somewhat different from that in other formats because of the various configurations of the machine.

2.2.4 Driver Uninstallation

Step 1: Uninstall the CDC driver

Execute the Command: `rmmod shcdc`.

Step 2: Check if the driver uninstallation is successful

Execute the Command: `lsmod`.

Check if the driver has been successfully uninstalled. If successful, the item `shcdc` will not be shown in the result.

Appendix A Technical Specifications

Dimensions

120×95mm² (excluding L-bracket)

Weight

≈100g

Environment

Operating temperature: 0 °C—55 °C

Storage temperature: -20 °C—85 °C

Humidity: 8%—90% non-condensing

*Storage humidity: 8%—90%
non-condensing*

Audio Decoding

From G.729A to A-Law, μ -Law

Audio Encoding

From A-Law, μ -Law to G.729A

Power Requirements

Maximum power consumption: $\leq 8W$

Audio CODEC

A-Law: 64kbps

μ -Law: 64kbps

G.729A: 8kbps

Appendix B Technical/Sales Support

Thank you for choosing Synway. Please contact us should you have any inquiry regarding our products. We shall do our best to help you. However, our technicians and salesmen are mainly responsible for maintaining our boards and providing relative technical support. If there are problems about Asterisk, please keep touch with Digium Inc. for help.

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