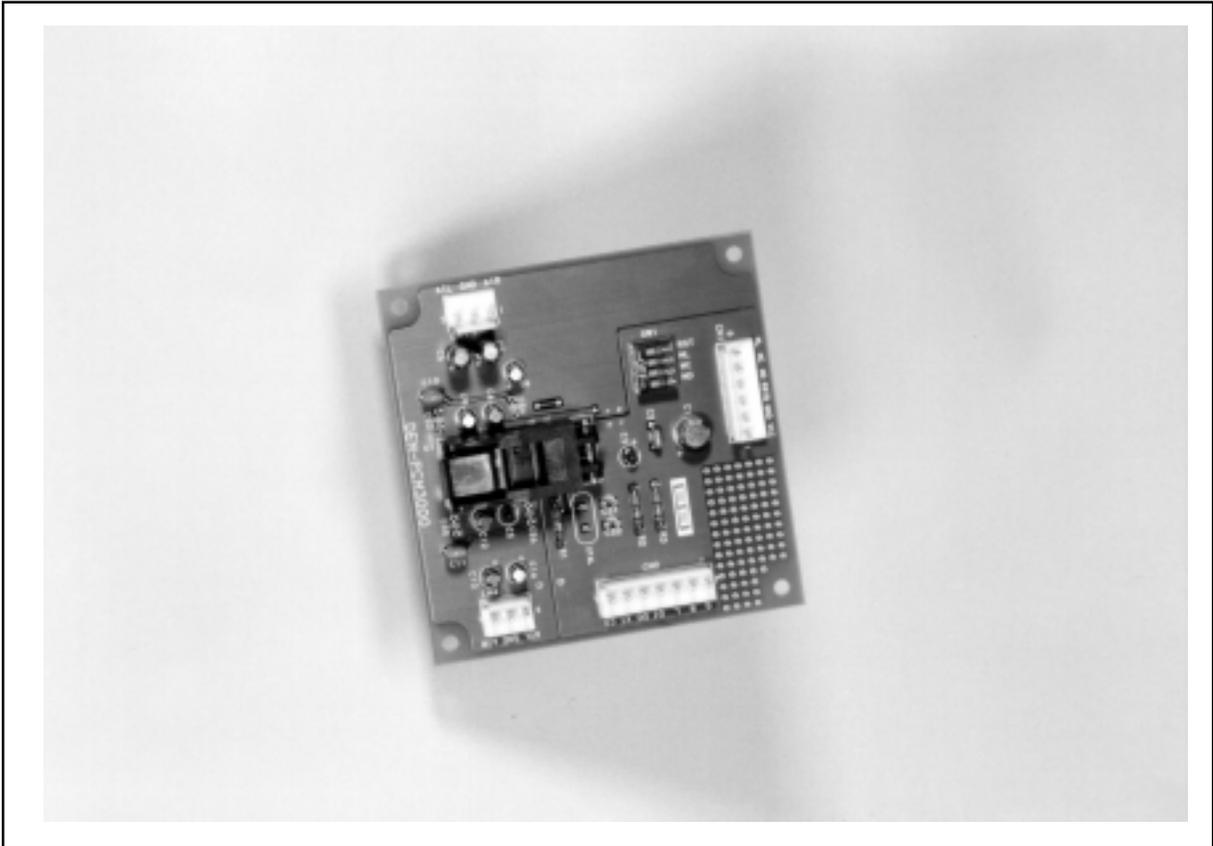




# DEM-PCM3000/3001

## DEM-PCM3000-1

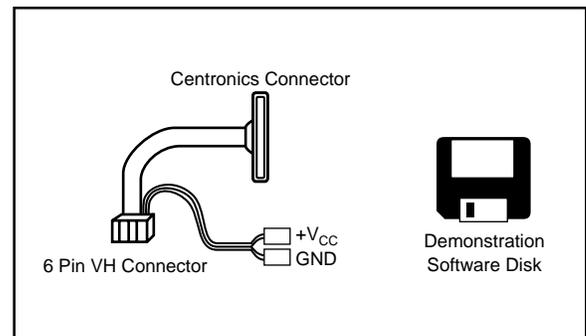


### FEATURES

- **DEM-PCM3000/3001**  
Basic evaluation board for the PCM3000 or PCM3001, including the minimum required peripheral circuits.
- **DEM-PCM3000-1**  
DEM-PCM3000 with additional demonstration software for evaluation. Enables evaluation of the PCM3000's various functions including DAC attenuation and data format selection.

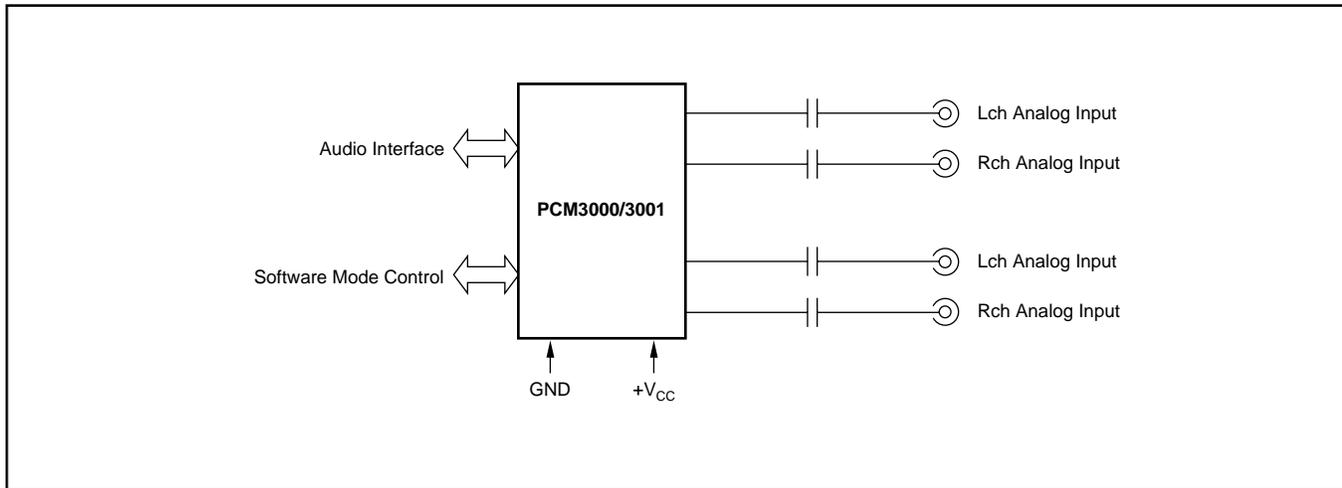
### BLOCK DIAGRAMS

#### DEMONSTRATION SOFTWARE AND CONNECTOR



# BLOCK DIAGRAMS (CONT)

## DEM-PCM3000/3001 SET-UP DIAGRAM



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# DEM-PCM3000/3001

The DEM-PCM3000/3001 is a basic evaluation fixture for the PCM3000/3001. When the evaluation board is connected to a power source, digital signal input, and master clock (256f<sub>S</sub>, 384f<sub>S</sub> or 512f<sub>S</sub>), it is possible to test the basic functions and operations of the PCM3000 or PCM3001.

The evaluation board operates from a single +5V power supply and provides a system clock to the PCM3000/3001 using a crystal oscillator or an external clock.

The internal register functions of the DEM-PCM3000/3001 can be controlled via ML, MC, and MD. These register functions are easily tested by using the board in conjunction with the PCM3000/3001 demonstration software kit. In addition, for testing the PCM3001, the data format of the digital input or output signals can be set with DIP switches (see Figure 1).

## DIGITAL FORMAT SELECTION

Select the digital data input/output format for the PCM3001 using the DIP switches, as shown in Figure 2. When testing the PCM3000, set the ML, MC, and MD switches to OFF.

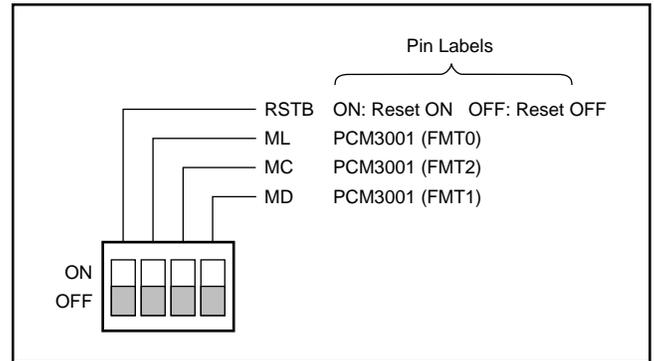


FIGURE 2. Format and Reset Control.

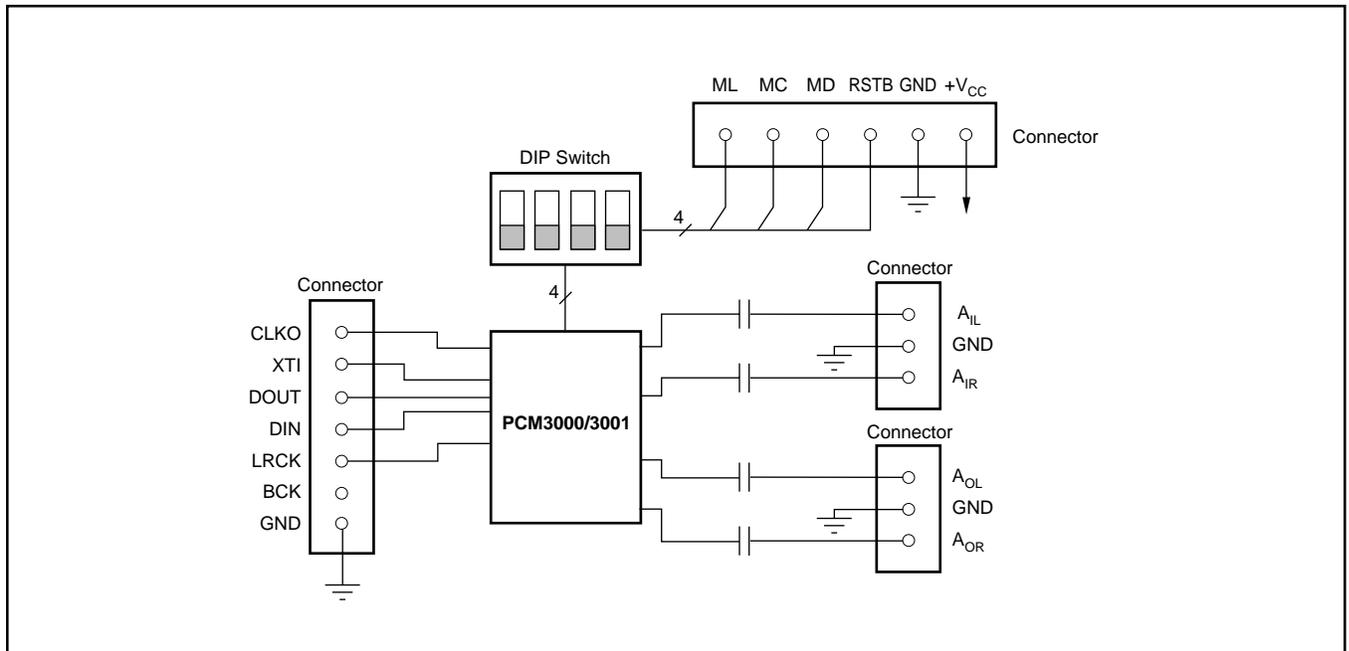
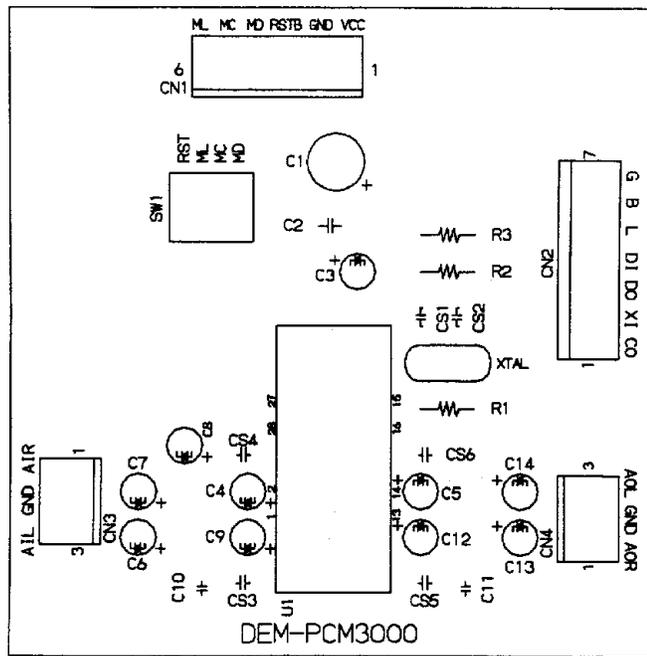


FIGURE 1. DEM-PCM3000/3001 Block Diagram.

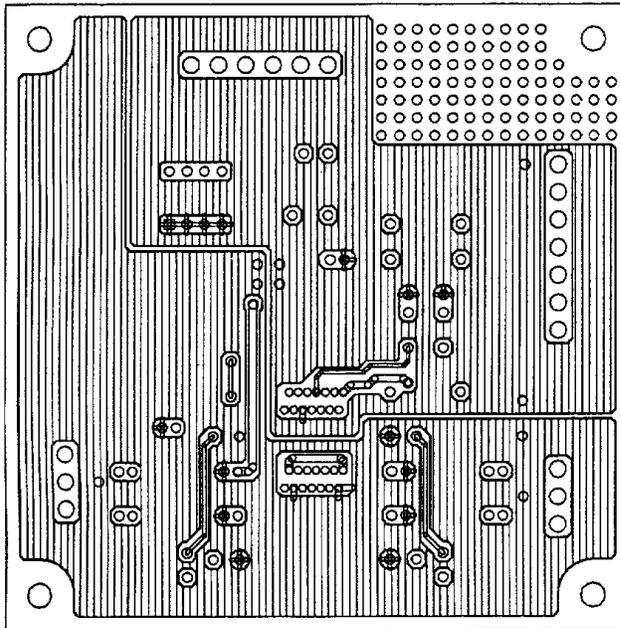
ML (FMT0)	MD (FMT1)	MC (FMT2)	FORMAT NUMBER	DAC DATA FORMAT	ADC DATA FORMAT
ON	ON	ON	FORMAT0	16-Bit, MSB First, Right-justified	16-Bit, MSB First, Left-justified
OFF	ON	ON	FORMAT1	18-Bit, MSB First, Right-justified	18-Bit, MSB First, Left-justified
ON	OFF	ON	FORMAT2	16-Bit, MSB First, Right-justified	16-Bit, MSB First, Right-justified
OFF	OFF	ON	FORMAT3	18-Bit, MSB First, Right-justified	18-Bit, MSB First, Right-justified
ON	ON	OFF	FORMAT4	16-/18-Bit, MSB First, Left-justified	18-Bit, MSB First, Left-justified
OFF	ON	OFF	FORMAT5	16-/18-Bit, MSB First, I <sup>2</sup> S	18-Bit, MSB First, I <sup>2</sup> S
ON	OFF	OFF	FORMAT6	16-Bit, MSB First, DSP-frame	16-Bit, MSB First, DSP-frame
OFF	OFF	OFF	RESERVED		

TABLE I. Data Format Control.

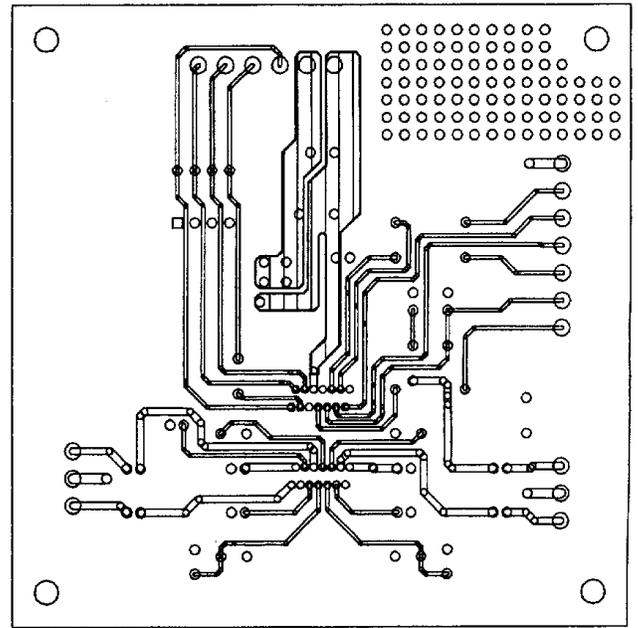




**Silkscreen**



**Top View**



**Bottom View**

FIGURE 4. DEM-PCM3000/3001 Parts Layout .

## DEMONSTRATION SOFTWARE KIT

The demonstration software kit is designed to perform evaluation of the PCM3000's special features using a PC. It consists of a 3.5" floppy disk with demonstration hardware and an interface cable/connector for the printer port. Install the demonstration software on a PC and connect mode control signals to the PCM3000 using the PC's printer port. This connection is made by attaching the included cable/connector to the printer port of the PC as shown in Figure 5. The demonstration software allows for selection and control of the PCM3000 functions while displaying them on the PC screen. Note that the demonstration software does not include audio signals and it is necessary to evaluate the basic characteristics in conjunction with another system that provides the three-wire digital audio interface.

## SYSTEM REQUIREMENTS

In order to operate the demonstration software, the following computer requirements must be met:

- An IBM-compatible PC with a 386/25MHz processor (equipped with printer port for I/O)
- Windows 3.1 (or better) operating system such as Windows 95

## Installing the DEM-PCM3000 Software

Insert the disk into drive A: and confirm that the following files are included on the floppy disk under the dem3000 directory:

```
inpuout.d11
vbrjp200.d11
ver.d11
dem3000.exe
dem3000.ini
```

These five files contained on the floppy disk should be copied to the hard drive under a directory named "dem3000". It is recommended to install the DEM-PCM3000 software on the hard disk drive. It is possible to run the program from the floppy but not recommended due to operating speed

considerations. It is also recommended to use a desk-top computer. Certain laptop PCs have non-standard parallel ports which may not be compatible with the evaluation board.

Type the following commands at the DOS prompt:

```
c:>md dem3000
c:>cd dem3000
c:\dem3000> copy a:\dem3000\*.*
```

Confirm that the files have been copied.

**NOTE:** If using a windows environment, under "File Manager", select "Create Directory" from the File menu and create a directory named "dem3000" on the hard drive where the software is to be installed. Copy all the files from the floppy disk's "dem3000" subdirectory.

## PRINTER PORT SET-UP

The demonstration software controls the software modes of the PCM3000 via a PC printer port. To ensure the printer port is functioning properly, establish the address of the printer port in the "dem3000.ini" file in directory "c:\dem3000".

## Determining the Address of the Printer Port

In PC-ATs (IBM PCs), the following three printer port addresses are used: 3BC (Hex); 378 (Hex); and 278 (Hex).

Determine the address of the printer port you are using. If the address is unclear, you can find it with the following steps in Windows 3.1:

- Switch from Windows to DOS mode
- Type "msd" at the DOS prompt

A set of address information, including the printer port, will be displayed on the screen to make it possible to determine the correct address. In Windows 95, you can view System Properties in the control panel and determine the printer port properties (resources).

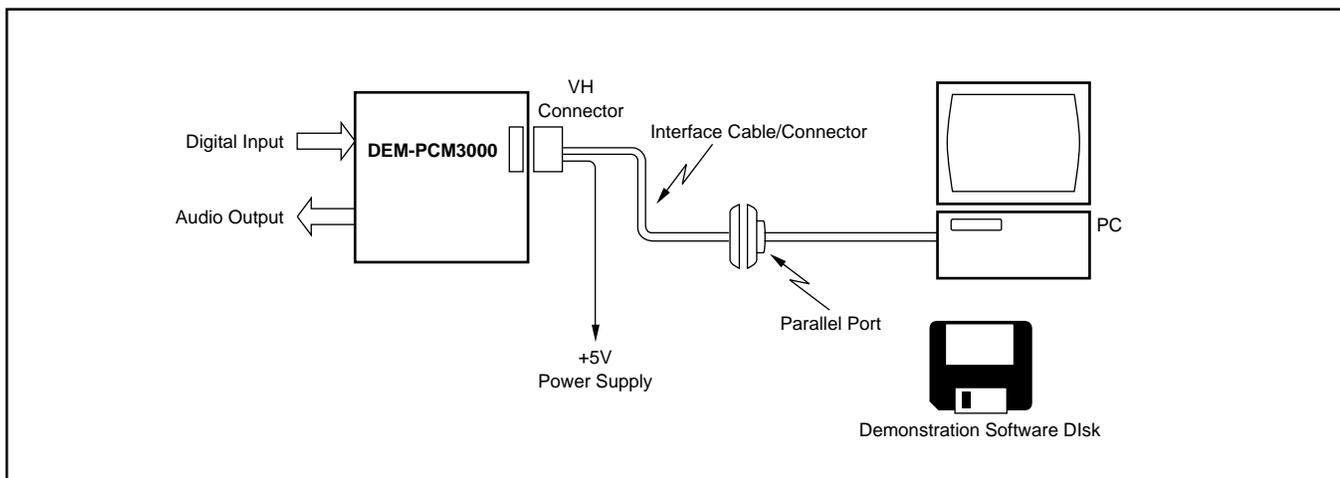


FIGURE 5. DEM-PCM3000-1 Interface Connection.

## Registering the Printer Port Address

Register the address of the printer port in file c:\dem3000\dem3000.ini. For example, if the printer port address is 378 (Hex), use the following method:

Open the Notepad accessory in Windows. Select "OPEN" from the File menu and open "dem3000.ini" in directory c:\dem3000. The following text is displayed:

```
[DEM3000]
PCMIFADR=&H3BC
```

Rewrite the above text file's second line from &H3BC to &H378. The rewritten text file content should appear as

```
[DEM3000]
PCMIFADR=&H378
```

Select Save from the File menu and exit.

## RUNNING/EXECUTING THE DEMONSTRATION SOFTWARE

Double-click the "dem3000.exe" file in directory "c:\dem3000" on the hard disk from the Windows File Manager. The main menu for the PCM3000/3001 is displayed on the screen. This menu shows the contents of each mode register and opens each of the submenu windows (see Figure 6).

Under the main menu, select Execute (E) or Window (W) and the submenus will be displayed. Under Execute (E), the user can set the Reset (R) function or select Exit (X) to leave the demonstration software. Under Window (W), the user is able to open the Attenuate Control, Function Control, or Format Control to set the PCM3000/3001 mode registers.

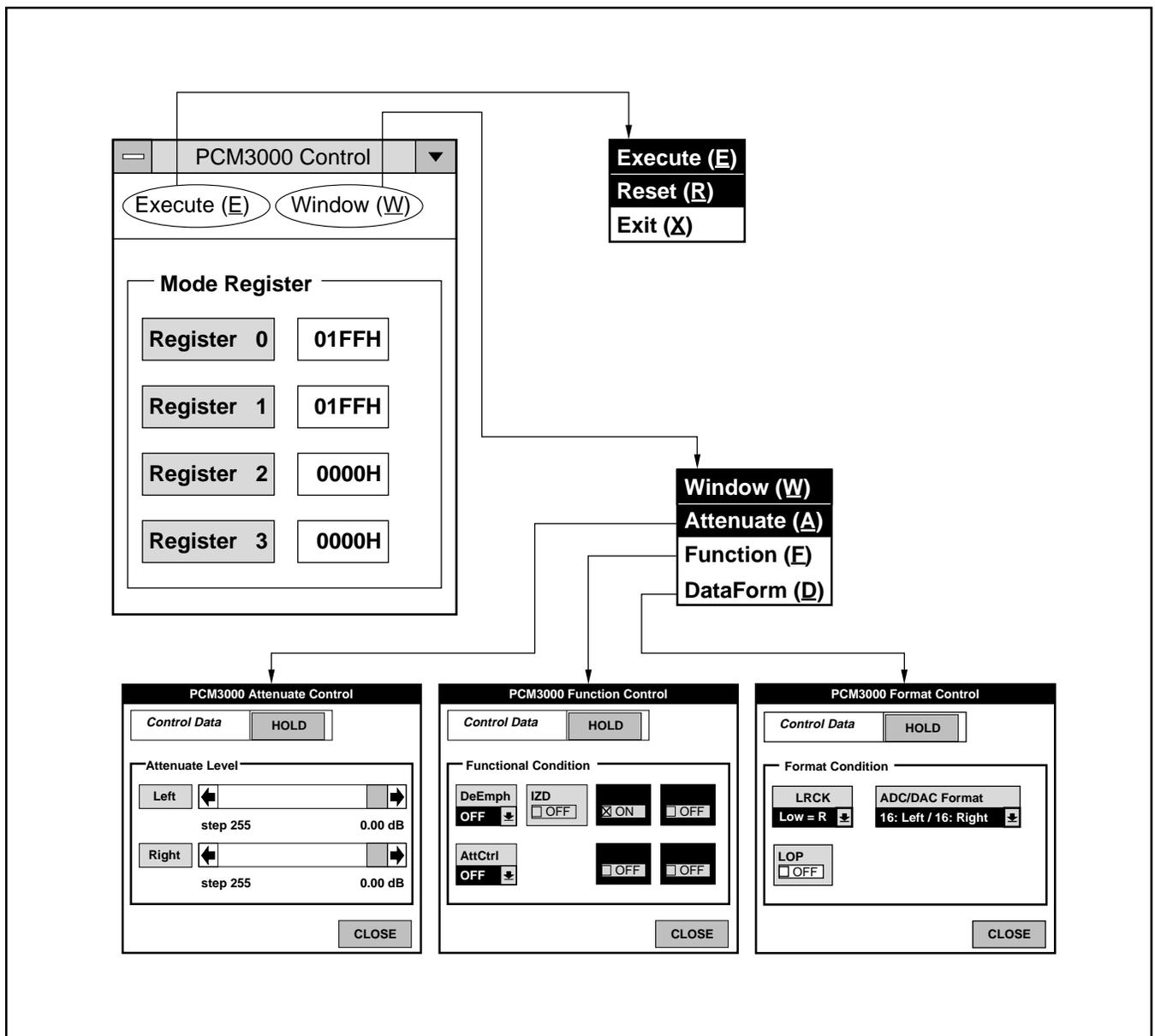


FIGURE 6. Demonstration Software Main Menu.

## Controlling the Mode Registers

To set the mode registers, double-click on Attenuate (A), Function (F), or DataForm (D) from the main menu. Each register will appear and have a “HOLD” or “PASS” selection for Control Data (see Figure 7). In “HOLD”, only the set data on the screen changes and the control data in the actual PCM3000 prior to “HOLD” are input. If “PASS” is selected, you can simultaneously change set data on the screen and also control data for the PCM3000. Select “CLOSE” to exit this menu and return to the main menu.

### ATTENUATE CONTROL

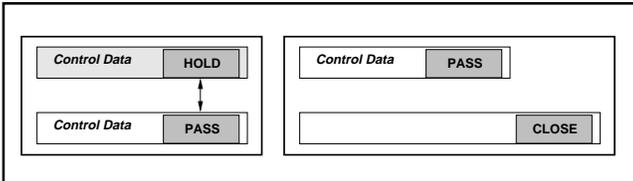


FIGURE 7. Control Data Status.

By selecting Attenuate (A), the user can control a L/R independent 256-step attenuator (Figure 8). When L/R simultaneous control is selected in Function (F), only the left channel is displayed (Figure 9).

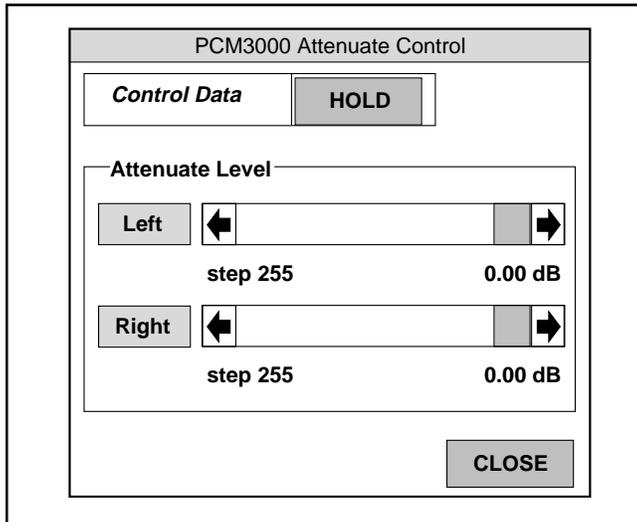


FIGURE 8. PCM3000 Attenuate Control for Individual Channels (default).

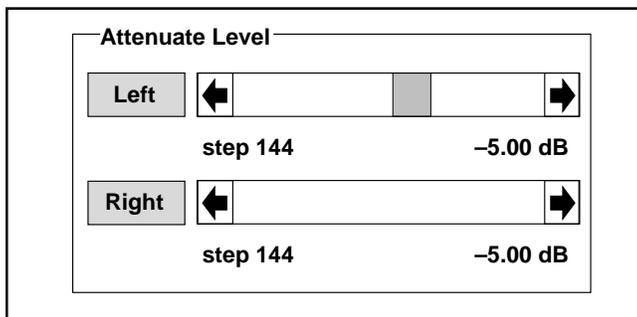


FIGURE 9. PCM3000 Attenuate Control for Simultaneous Channels.

## FUNCTION CONTROL

When Function (F) is selected from the menu, the Function Control screen is displayed (see Figure 10). The programmable functions that may be controlled are shown in Table II.

FUNCTION	FUNCTION LABEL	REGISTER	DATA FORMAT
RSTB	RSTB (Pin 28)		ADC/DAC
Attenuation Load Control	LDL (R), AL (R) 7~0	0, 1	DAC
Soft Mute	MUT	2	DAC
De-emphasis	DM0, 1	2	DAC
Output Enable	OUT	2	DAC
Infinite Zero Detect	IZD	2	DAC
Attenuate Control	ATC	2	DAC
(common, individual)			
High Pass Filter Control	BYPS	2	ADC
Power Down	PDWN	2	ADC
Left/Right Polarity	LRP	3	ADC/DAC
Data Format	FMT (2~0)	3	ADC/DAC
Loop Back	LOP	3	ADC/DAC

TABLE II. Programmable Functions.

### FORMAT CONTROL

When DataForm (D) is selected, the Format Control screen appears (see Figure 11) and the following controls are possible:

LRCK polarity selection

Digital Loop-back selection

Audio Data (ADC/DAC) Format

### ORDERING INFORMATION

PRODUCT	DESCRIPTION
DEM-PCM3000	PCM3000 Demonstration Board
DEM-PCM3001	PCM3001 Demonstration Board
DEM-PCM3000-1	PCM3000 Demonstration Board, Software Cable

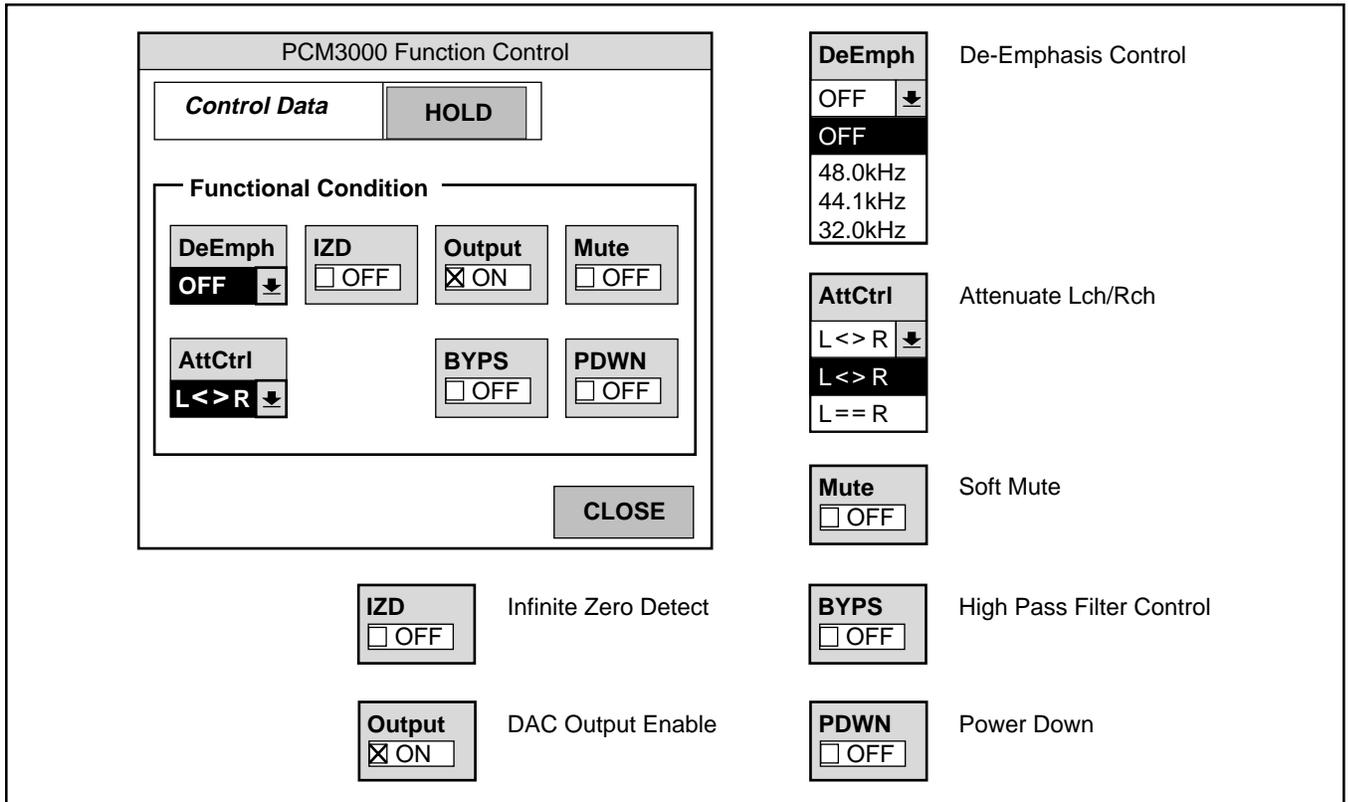


FIGURE 10. PCM3000 Function Control.

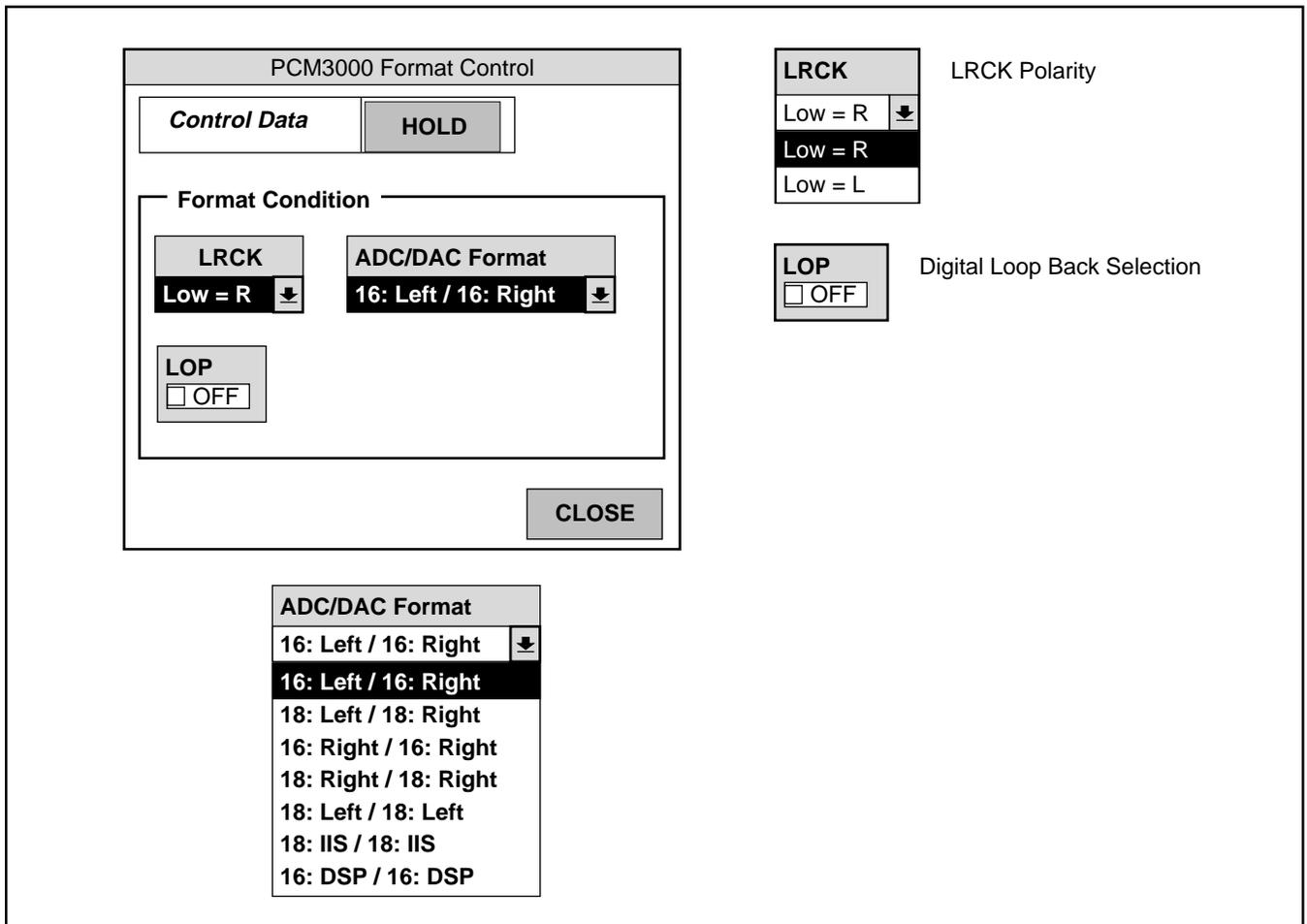


FIGURE 11. PCM3000 Format Control.

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