Agilent Technologies

Baseband Studio
Quick Start–Installation Guide

Overview

This guide provides instructions on how to set up a PC and signal generator to run Agilent Baseband Studio applications. This process comprises the following steps:

1. Ensure that your PC and source meet the basic installation requirements (see page 2 and page 3)

2. Verify that the hardware you received is correct, and
   note each Baseband Studio PCI card's license and serial numbers (see page 4)

3. Install the hardware (for PC hardware, see page 5, for external cabling, see page 6)

4. Install the Baseband Studio software, and
   run the Baseband Studio IO Config utility to configure and verify the installation (see page 7)

Also provided are:

- An example of configuring a source in Agilent IO Libraries (see page 8).
- Troubleshooting tips (see page 9)
- Application-specific cabling (see page 10)

Notes: Demo versions of several Baseband Studio applications are available on the Baseband Studio software CD.
A declaration of conformity is on file for the N5101A Baseband Studio PCI card, and is available upon request.

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Part Number N5101-90001

1. System Requirements

Minimum PC Requirements

All Applications:

- You must be able to log on to your PC using an account with administrative privileges.
- LAN or GPIB interface
  The PC and all sources *must* be connected via LAN or GPIB.
- Available PCI slot(s) that meet the 2.2 PCI (or later) specifications
  (see individual applications for the number required)
- Acrobat® Reader (to view supporting documentation)

Note: If the following programs are not already installed on your computer, the software automatically installs them:

- Agilent IO Libraries Version M.01.01.02
- Microsoft®.NET Framework (English) V.1.0.3705. T

These two programs are *not* automatically uninstalled when you uninstall the Baseband Studio applications; if you wish to remove them, they must be uninstalled separately.

N5110A Baseband Studio for Waveform Streaming:

	Streaming Rate		
	Slow ≤5MSa/s	**Medium ≤20 MSa/s**	**Fast 40 MSa/s**
Processor	Pentium® 4, 2 GHz or greater	Pentium 4, 2 GHz or greater	Pentium 4, 2 GHz or greater
Front Side Bus	400 MHz	533 MHz	533 MHz
Memory (Size, Type)	512 MB, PC2100	1 GB, PC2700	2 GB, PC2700
Available PCI Slots	1: 32 bit/33 MHz and 1 additional PCI slot opening	1: 64 bit/66 MHz and 1 additional PCI slot opening	1: 64 bit/66 MHz or 1: 64 bit/133 MHz[a] and 1 additional PCI slot opening
HDD Controller	Generic IDE	Ultra 160 SCSI RAID Controller	Ultra 320 SCSI RAID Controller
Hard Disks	1: Ultra ATA (7200 RPM)	2: Ultra 160 SCSI (10K RPM)	5: Ultra 320 SCSI (15K RPM)
HDD Configuration	Single Drive with OS + Data	Dual Drive with OS + Data	Dedicated OS Drive, Data on RAID
OS	Windows® 2000 Professional, SP 3	Windows 2000 Professional, SP 3	Windows 2000 Professional, SP 3
Example	HP XW4100	HP XW8000	HP XW8000 w/add–on HDDs

[a]Required for the RAID Controller

N5115A Baseband Studio for Fading:

	Single-Channel Configuration	Dual-Channel Configuration
Processor	Pentium III, 600 MHz or greater	Pentium III, 600 MHz or greater
Memory (RAM)	256 MB minimum	256 MB minimum
Free Disk Space	100 MB minimum	100 MB minimum
Available PCI Slots	1: 32 bit/33 MHz and 1 additional PCI slot opening	2: 32 bit/33 MHz and 2 additional PCI slot openings
OS	Windows 2000 Professional, SP 2 or greater	Windows 2000 Professional, SP 2 or greater

Source Requirements

	Model (Firmware Revision)	Option	Interface[a]	Configuration
N5110A Baseband Studio for Streaming	E8267C (≥C.03.31) **or** E4438C (≥C.03.30)	601 or 602	LAN or GPIB	Before they can be used, all sources must be configured in Agilent I/O Libraries. See I/O Libraries notes below
N5115A Baseband Studio for Fading	E4438C (≥C.03.40)			

[a]The PC and all sources *must* be connected via LAN or GPIB.

IO Libraries Notes: If Agilent I/O Libraries are not already installed on your computer, the software automatically installs them (software installation is described on page 7). The software also installs a copy of the I/O Libraries configuration guide in the Baseband Studio IO Config directory: *Start > Programs > Agilent Baseband Studio > Baseband Studio IO Config > IO Libraries Install and Config Guide.*

You can view the configuration guide on the installation CD, in the *\AgilentIOLibrary\docs* directory.

Before they can be used, all sources (including those using non-Agilent GPIB interfaces) must be configured in Agilent I/O Libraries. This can be done either before you install the Baseband Studio software (if you already have I/O Libraries installed), or after the software installation (described on page 7).

If you have non-Agilent VISA libraries installed, and you want to manually install the Agilent IO Libraries *before* installing the Baseband Studio software, follow the section in the Agilent I/O Libraries configuration guide for secondary VISA installation.

If you are not familiar with configuring an instrument using the Agilent IO Libraries, see page 8.

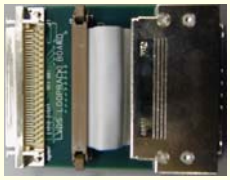
2. Checking the Shipment

Hardware

For *each* N5101A Baseband Studio PCI Card purchased, you should receive:

Baseband Studio PCI Card
N5101-63001

Loopback Fixture (For troubleshooting)
E4400-63583



Baseband Studio CD
N5101-90002

Quick Start Guide
N5101-90001

GPIO Bracket
N5101-60006

Replaceable Parts of GPIO Bracket:
SMB-to-MCX Cable: 8121-0655
Ribbon Cable Assy: N5101-60004

Digital Bus Cable
N5101-60003

2 SMB to SMB Cables
(Used with 2 Baseband Studio PCI Cards)
8121-5020 (each)

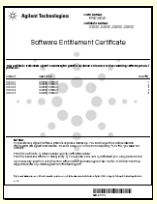
Standoffs & Screws
(Used with 2 Baseband Studio PCI Cards)

Standoff: 0380-2046 (each)
Screw: 0515-0430 (each)

Entitlement Certificate

Each order should include *one* Entitlement Certificate:

Entitlement Certificate



Baseband Studio applications require a license file to be fully functional. The entitlement certificate shipped with your order lists the Baseband Studio products purchased, and has two of the four numbers required to get the license file. At *www.agilent.com/find/softwarelicense*, you must fill out the online license form; you will need:

From the Entitlement Certificate

- Order Number
- Certificate Number

From the N5101A Baseband Studio PCI Card[a]

- PCI card Bar Code License Number[b]
- Instrument (Model) Serial Number[c]

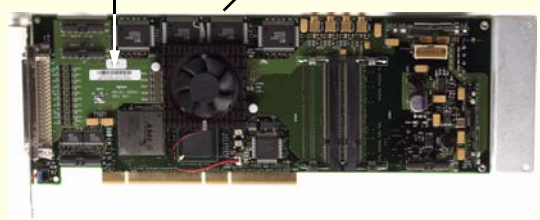
[a]Applications are licensed to a specific PCI card; you may license more than one application to a given PCI card.
[b]This number appears on a sticker on the Baseband Studio PCI card (see below), and in the Baseband Studio IO Config utility's N5101A Details window. The IO Config utility is run *after* you install the Baseband Studio software (described on page 7).
[c]This number appears on the Baseband Studio PCI card (see below), and on a sticker on the box in which the card is packaged.

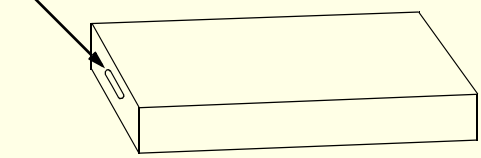
Note: Remove the serial number sticker from the Baseband Studio PCI card packaging, and save it for future reference. This will enable you to reference the serial number without removing the PCI card from your PC.

After the Baseband Studio software is installed and configured (page 7), copy the license file into the directory: *C:\Program Files\Agilent\Baseband Studio\LicenseFiles*

PCI Barcode License Number

Model Serial Number (sticker on other side of card, and sticker on card packaging)





3. Installing Hardware

PC Hardware & Internal Cables

All Applications:

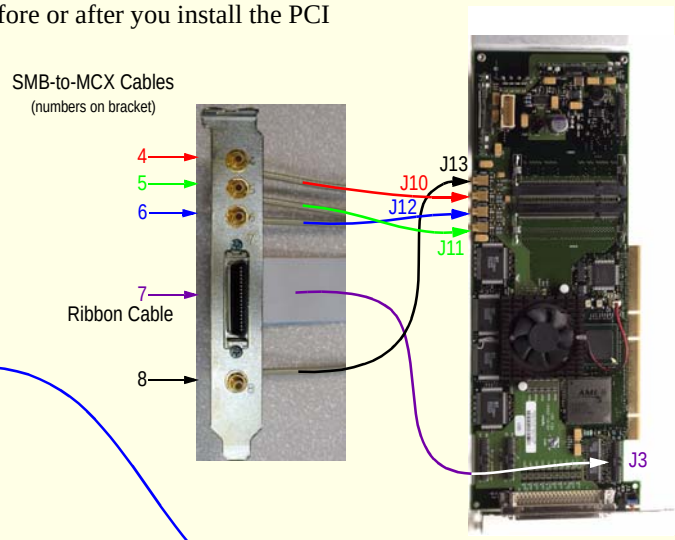
Power down the PC and disconnect the ac power cable.

Note: Before you install the Baseband Studio PCI card, be sure to note the bar code license number and the model serial number on the card (described on page 4).

Single-Card Installation

1. **Internal cabling**: connect the GPIO bracket ribbon cable to J3 on the PCI card.
   The remaining cables can be connected, as shown, either before or after you install the PCI card in the computer.

GPIO Bracket		PCI Card
4	→	J10
5	→	J11
6	→	J12
7	→	J3
8	→	J13



2. Install the card and bracket using two PCI slots in the PC. Refer to the PC's documentation for specific installation instructions.

3. Reconnect the ac power cable.

4. If the LAN/ GPIB was disconnected, reconnect it.

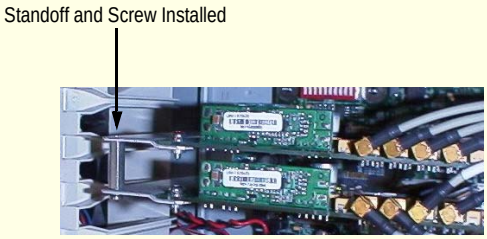
Two-Card Installation

Perform the single-card installation twice, once for each N5101A Baseband Studio PCI card.

Installing Cards Side-by-Side

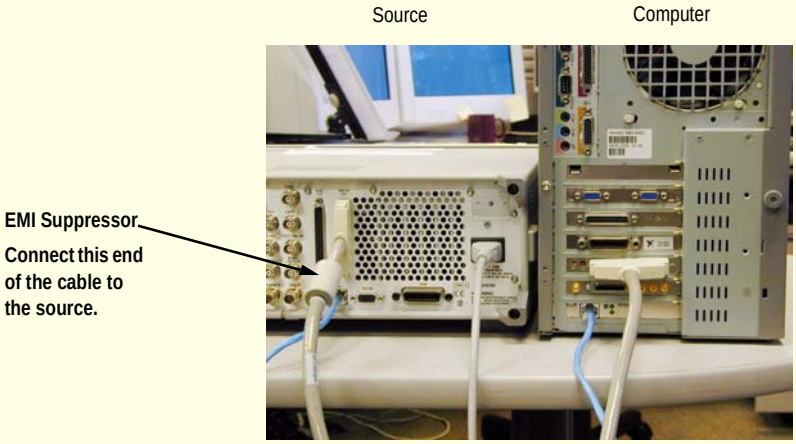
If the PCI slots are such that the two cards must be installed side-by-side, you may need to route one or both of the ribbon cables under the PCI cards to connect them. This does not damage the cables.

When two cards are installed side-by-side, before you install them in the PC, install the standoffs (and screws), as shown below.



External Cables

All Applications: Digital Bus Cable



1. Inspect the Digital Bus cable and connectors; ensure that they are clean and undamaged.

2. Connect a Digital Bus cable between each N5101A Baseband Studio PCI card and a source, connecting the end of the cable with the EMI suppressor to the source (see illustration above).

Connector Latch Note:

The Digital Bus cable connector has a release latch on each side. As you make a connection, you must simultaneously squeeze these release latches (see illustration at right); the connector should snap into place. A securely connected cable does not come loose when gently pulled.

To disconnect the cable, squeeze the release latches as you remove the connector.

4. Installing the Software

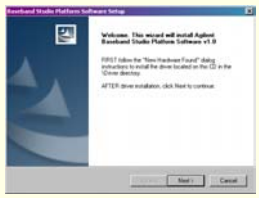
1. If not already done, reconnect the ac power cable and turn on the PC.
   The PC's Found New Hardware wizard prompts you for a suitable driver, which is located on the Baseband Studio software CD.

2. Insert the software CD into your PC's CD–ROM drive.

3. In the Found New Hardware wizard, click **Next**.
   Follow the instructions in this wizard, and accept the driver *N5101A.inf*.
   If the wizard does not find the driver automatically, browse the *driver* folder on the CD and select it.

   Any Problems?
   See page 9

4. Locate *AgilentBasebandStudioInstall.exe* on the CD and run it. The Agilent Baseband Studio-InstallShield Wizard appears; click **Next**, and follow the setup instructions. The Baseband Studio PCI card software installs.



5. If not already done, configure the source using the Agilent IO Libraries
   See page 8 for an example using the LAN interface. Sources connected using GPIB are configured in a similar manner.

6. Run the Baseband Studio IO Config utility: This utility provides the system configuration and verification required by Baseband Studio applications.
   Start > *Programs* > *Agilent Baseband Studio* > *Baseband Studio IO Config* > *IO Config*
   Follow the on-screen instructions. For details on using this utility, refer to the utility's help.
   Run this utility whenever you make a change that could affect the configuration of Baseband PCI cards and instruments.

   Any Problems?
   See page 9

7. After the Baseband Studio software is installed and configured, copy the license file into the directory:
   C:\Program Files\Agilent\Baseband Studio\LicenseFiles
   For details on obtaining a license file, see Entitlement Certificate on page 4; for details on using a license file with an application, refer to the Baseband Studio IO Config help, and the help in the individual applications.

8. Run the Baseband Studio applications (found in the *Agilent Baseband Studio* directory).
   When you initially run a Baseband Studio application, it looks for any required license file.

   See page 10 for information on application-specific cabling.

Configuring a Source Using the LAN Interface

Direct LAN Connection between PC and Source:

A direct connection between the PC and a source requires a LAN crossover cable. In this case, *first* do the following:

1. Select **Start** > **Settings** > **Network & Dialup Connections**
2. Right-click on the Local Area Connections icon, and select **Properties**.
3. Select Internet Protocol, and click **Properties**.
4. Click **Use the following IP address**:, and enter the source's IP address (adding 1 to the last digit), subnet mask, and default gateway.
5. Click **OK**, **OK**.

All Configurations:

1. Run the Agilent IO Libraries IO Config program: **Start** > **Programs** > **Agilent IO Libraries** > **IO Config**

2. If no interfaces are configured, click **Auto Config**.

Note: The selections on the list you see may differ from the ones shown here.

If serial (COM) ports are listed, but you are not using instruments on the serial ports, you can remove these interfaces from the list, if you wish.

3. Select **TCPIP LAN Client (LAN Instrument)**

4. Select **TCPIP0** and click **Edit**.

5. Click **Edit VISA**.

6. Click **Add Device**.

7. Enter the source's IP address; a device name is not required.

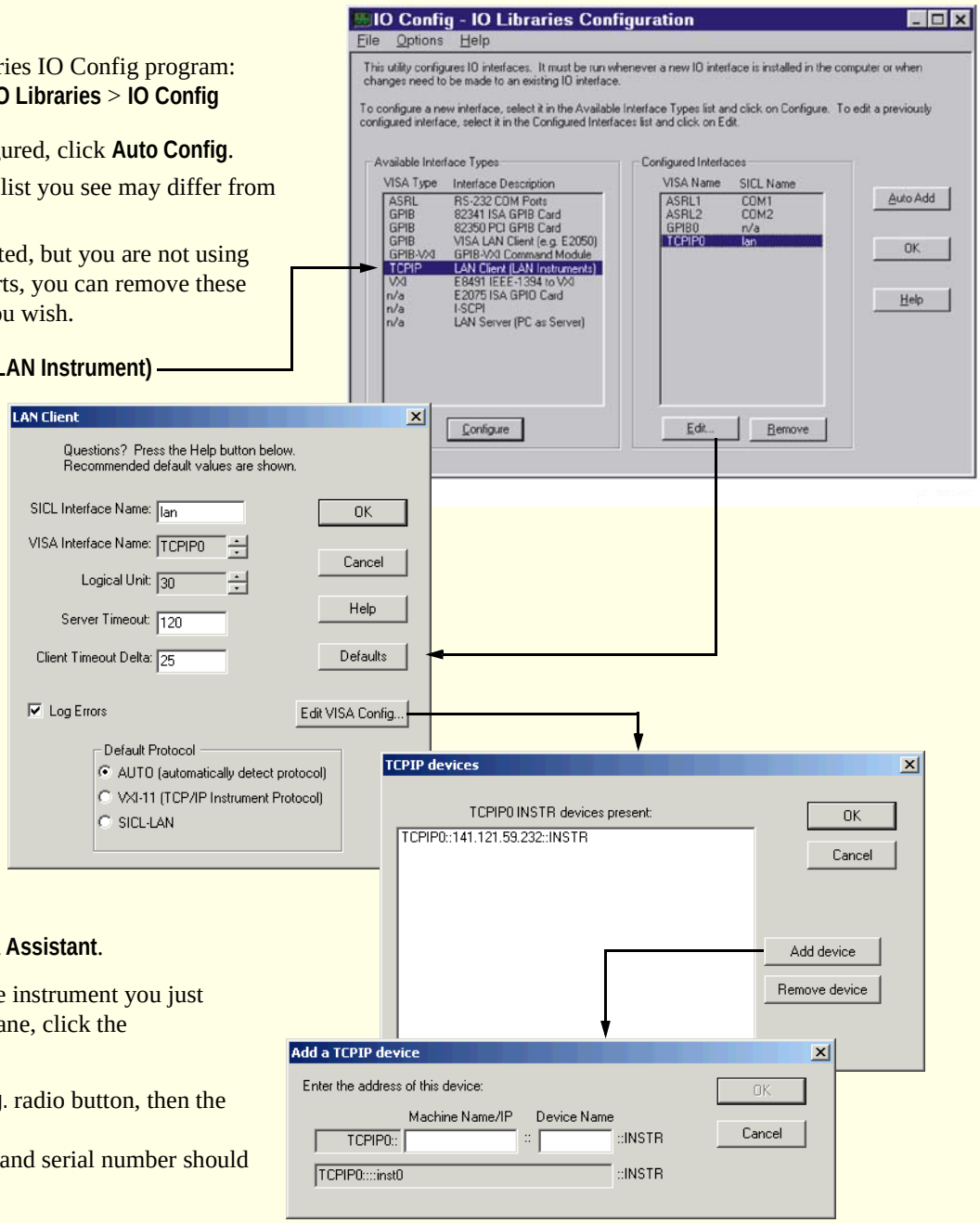
8. Click **OK/ OK/ OK/ OK** to close IO Config windows.

9. As verification, run the Agilent IO Libraries Visa assistant program: **Start** > **Programs** > **Agilent IO LIbraries** > **Visa Assistant**.

10. In the left pane, select the instrument you just configured; in the right pane, click the **Formatted I/O** tab.

11. Click the **SCPI Instr. Lang**. radio button, then the ***IDN?** button.
Your instrument's model and serial number should appear.

12. Select **File > Exit**.



Troubleshooting

The Found New Hardware wizard is not displayed

If an N5101A Baseband Studio PCI card was previously installed, you may see a slightly different dialog from the New Hardware Detected wizard. If this happens, select the file *N5101A.sys* from the *driver* directory on the Baseband Studio CD, rather than the *N5101A.inf* file.

No prompt for the N5101A Baseband Studio PCI card driver

If you are not prompted for the N5101A Baseband Studio card driver, turn off the PC and ensure that the PCI card is securely seated in its slot. Reboot the PC, and log on using an account with administrative privileges.

N5101A Baseband Studio PCI card does not appear in the IO Config utility Select an N5101A list

Ensure that all N5101A Baseband Studio PCI cards are installed correctly:

1. On the PC desktop, right-click the My Computer icon.
2. Select **Properties**.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
   Under the Agilent Technologies Test & Measurement Devices, you should see at least one Agilent Technologies N5101A.
5. Right-click an Agilent Technologies N5101A icon and select **Properties**.
   In the Device status area, you should see the message, “This device is working properly.” If not, the N5101A Baseband Studio PCI card is probably not seated properly in the PC.

Source does not appear in the IO Config utility Select a Compatible Instrument list

In the Create Hardware Configuration window, click **Instrument Search**.

If the source appears in the Instrument Search window, check the **Type Description**.

- *Non-Compatible Instrument*: this is not a supported model (see Source Requirements on page 3).
- *Non-Compatible Option*: the source is missing a required option (see Source Requirements on page 3).
- *Unreachable Visa Instrument*: the source is probably not connected to the PC (check the LAN/GPIB).
  For LAN connected instruments, you can try to ping the instrument from your PC:
  a. Select **Start** > **Programs** > **Accessories** > **Command Prompt**
  b. At the command prompt, type: `ping` *<hostname or IP address>*
     If you only see `Request timed out`, verify the cabling, or contact your LAN/system administrator.

If the source is not listed in the Instrument Search window, it probably was not set up using the Agilent IO Libraries. Refer to the *Agilent IO Libraries Configuration Guid*e, as well as the example on page 8.

Application–Specific Cabling

N5110 Baseband Studio for Waveform Streaming, External Triggering

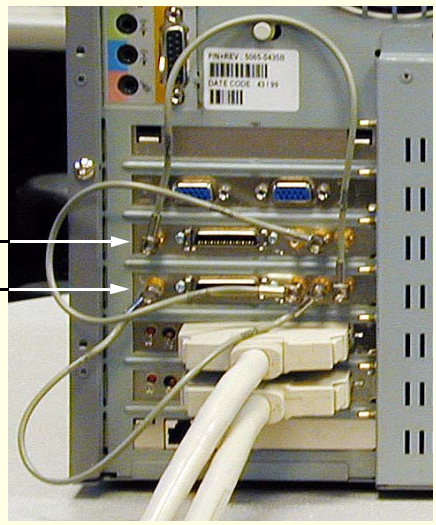
The GPIO bracket accepts an input trigger (Start), and provides two output markers (Ready and Underflow). For details, refer to the streaming application's help.

N5115 Baseband Studio for Fading, Dual Channel

Recommended Setup

Connect three SMB-to-SMB cables between the two GPIO brackets as shown.
The cables are connected as follows:

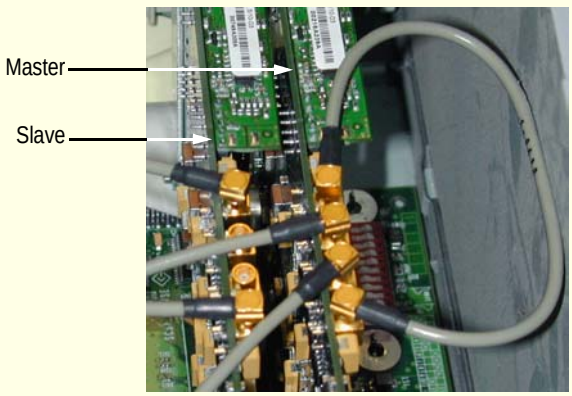
Connector on Master GPIO Bracket	Connect to...	GPIO Bracket Connector
4		Slave 8
5		Master 8
6		Slave 5



Alternate Setup

If the PC has fewer than four open PCI slots, and you re using only Baseband Studio for fading, you can connect the PCI card cables internally. Connect three MCX-to-MCX cables between the two PCI cards as shown.
The cables are connected as follows:

From Master PCI Card	Connect to...	PCI Card
J13		Master J11
J10		Slave J13
J12		Slave J11



For details, refer to the Fading application's help.