RightFAX®

v7.0 Fax Board Guide

Information in this document is subject to change without notice. Companies, names, and data used in examples herein are fictitious unless otherwise noted.

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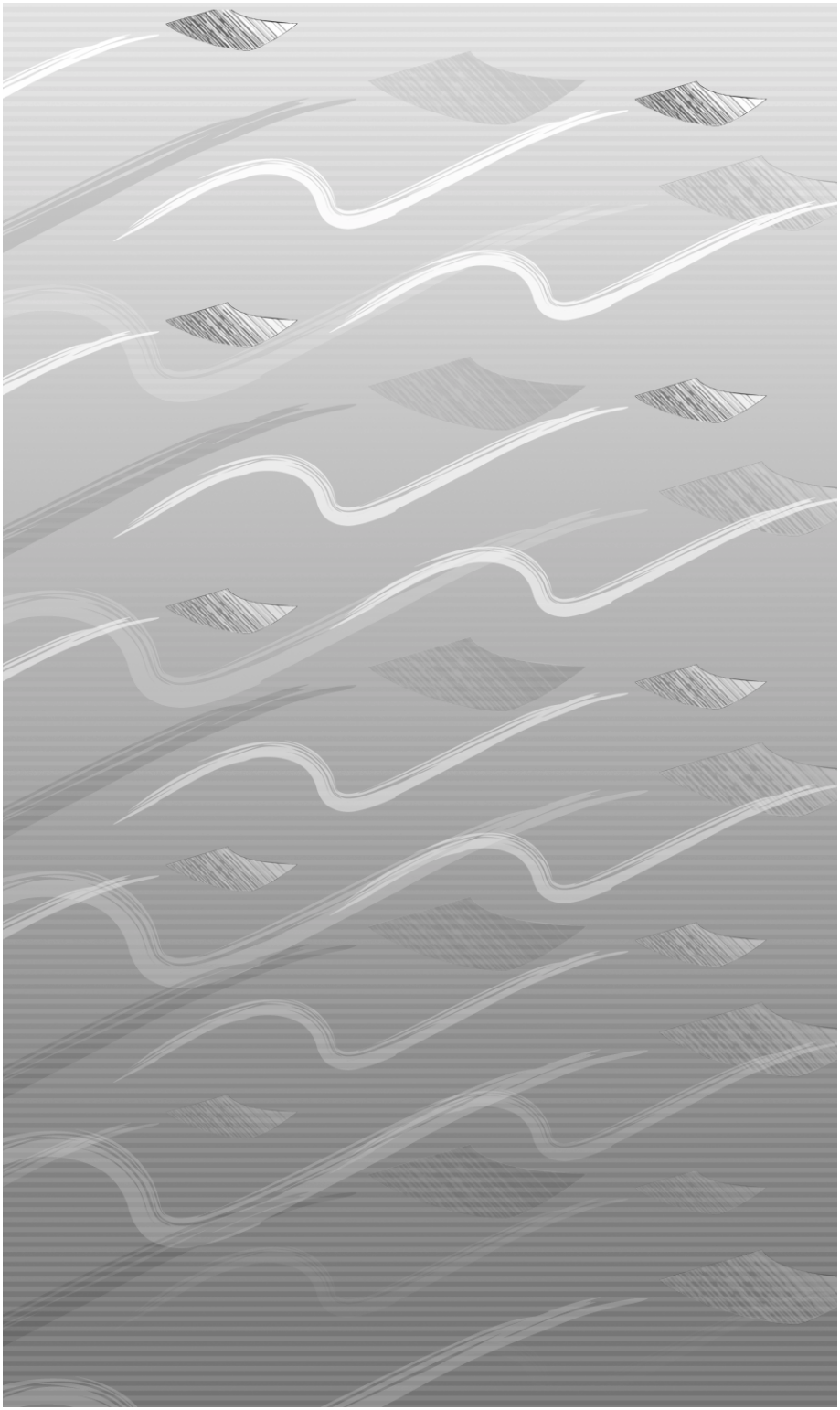

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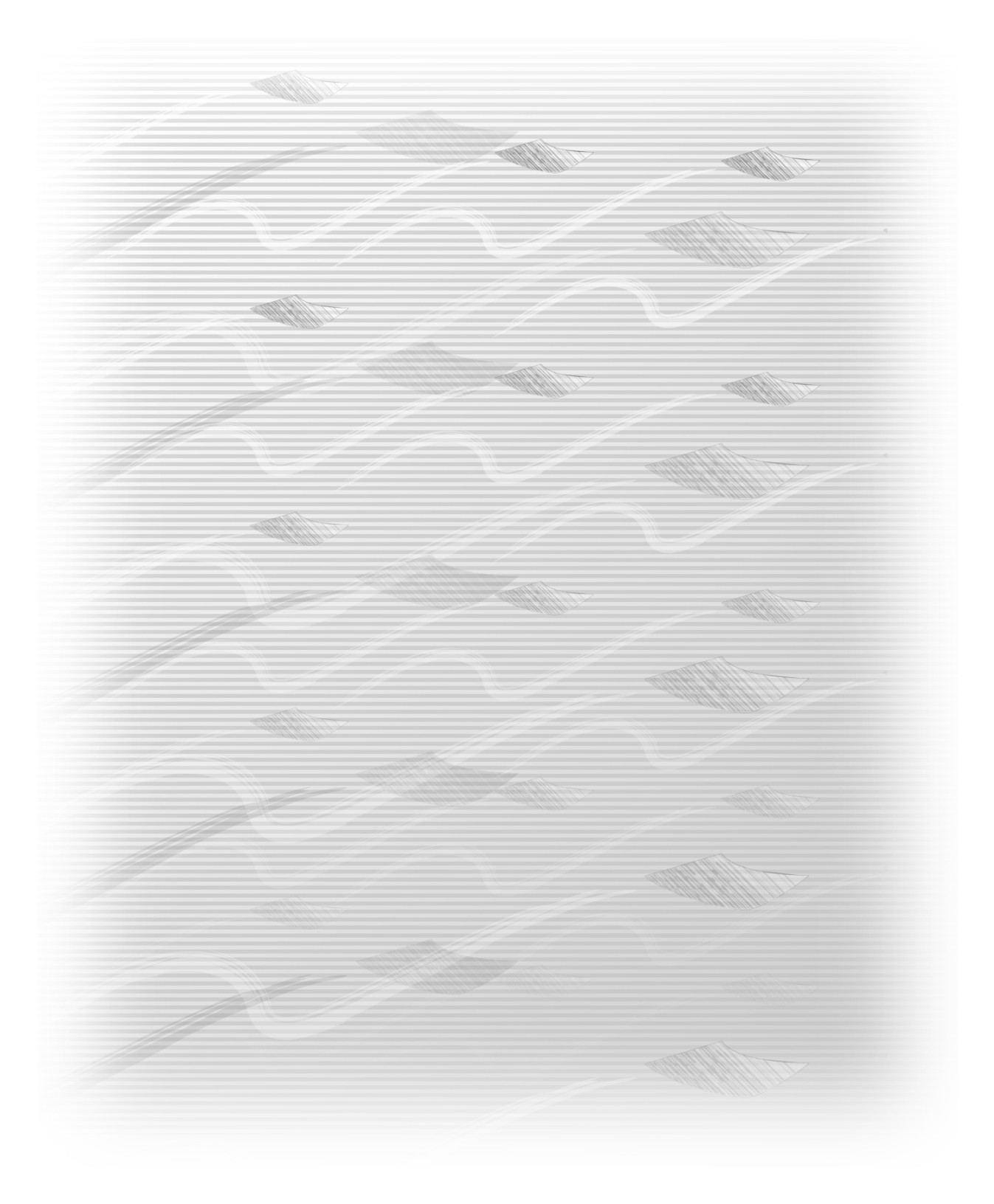

Chapter 1: Introduction

The *RightFAX Fax Board Guide* is designed for RightFAX administrators who will be installing and configuring fax boards for use with RightFAX. This guide assumes you have knowledge of the Windows NT operating system as well as general knowledge of computer hardware installation procedures and conventions. In addition, this guide assumes that you have read and understand all documentation provided with your fax board.

The *RightFAX Fax Board Guide* is intended to supplement the documentation provided by your fax board manuafacturer only and is not intended as a replacement. Although we make every effort to ensure that the information in this guide is current, because the functionality of the fax boards described here is subject to change without input from RightFAX, we can provide no guarantee that the information provided in this guide is 100% accurate.

RightFAX also provides several additional sources for information, each designed so that you can get the most out of your RightFAX software quickly and easily.

Resources for the RightFAX Administrator

RightFAX Administrator's Guide. This guide contains detailed instructions on installing and configuring RightFAX for both the server and client workstations. This guide is specifically designed for RightFAX administrators and includes the technical information necessary to manage the fax server.

RightFAX Docs-on-Demand and TeleConnect Guide. This guide is designed for use by RightFAX administrators who will be installing and configuring the Docs-on-Demand™ and/or TeleConnect™ modules. This guide provides information on installing, using, managing, and integrating the RightFAX Docs-on-Demand and TeleConnect modules with your RightFAX software.

RightFAX Fax Board Guide. This guide provides installation, testing, and configuration instructions for all supported fax hardware.

RightFAX Gateway for Microsoft Exchange, Gateway for Lotus Notes, and Web Client Guide. This guide is included when you purchase RightFAX Enterprise Suite, the Microsoft® Exchange or Lotus® Notes® Gateway™ , or the Web Client™ optional module. This guide provides information on installing, using, managing, and integrating the RightFAX E-mail Gateways and RightFAX Web Client module with your RightFAX software.

RightFAX OCR and PDF Modules Guide. This guide is included when you purchase RightFAX Enterprise Suite™ , either of the OCR modules, or the PDF module. This guide provides information on installing, using, managing, and integrating these modules with your RightFAX system.

RightFAX SNMP Alerting Module Guide. This guide is designed for use by RightFAX administrators who will be installing, configuring, and using the RightFAX SNMP Alerting software for realtime monitoring of the RightFAX server via SNMP-capable network monitoring applications.

Resources for the Production Environment Administrator

RightFAX Connector for SAP R/3 Guide. This guide is designed for use by RightFAX and SAP R/3 administrators who will be installing and configuring the SAP Connector, and SAP clients who will be sending and receiving faxes via the Connector.

RightFAX Filter for Oracle Guide. This guide is designed for RightFAX and Oracle administrators who will be installing and configuring the RightFAX Filter for Oracle for the Production Fax Environment, and for the Oracle clients who will be sending faxes via the Filter.

RightFAX InternetLink Module Guide. This guide s designed for RightFAX administrators who will be installing and configuring the RightFAX InternetLink module for the Production Fax Environment. This guide includes all the technical information necessary to operate the InternetLink module for delivery of production faxes via the Internet.

RightFAX Production Environment Guide. This guide is designed for use by RightFAX administrators who will be installing and configuring the Production Fax module onto the RightFAX server for advanced automation of their business fax processes.

RightFAX Professional Services Group. The RightFAX Professional Services Group provides hands-on expertise in the installation, setup, and customization of the RightFAX Production Environment. The Professional Services Group will assess your requirements and work either on-site or remotely, to ensure compliance with your organization's pre-determined project scope, defined boundaries, timelines, benchmarks, and closure expectations.

Resources for RightFAX Users

Because your RightFAX server(s) may support dozens, hundreds, or even thousands of fax users, RightFAX has designed its end-user documentation

to be thorough, easy-to-use, and easily accessible. All the information your fax users need to operate their client applications is included in the online help installed with the application. For users who prefer to reference written materials, RightFAX also provides Quick Reference Cards for all its major client applications. These useful cards are compact and can be easily distributed throughout even the largest organizations.

Online Help. RightFAX online help is a convenient and easy-to-use source of assistance. You can access the online help by selecting the **Help** menu in any FaxUtil or Enterprise Fax Manager window. Online help lets you scan for help by topic, or search for key words and terms. In addition, many RightFAX dialogs include a "What's This?" Help button **[?]** in the top right. Click this button, then click on any field in the dialog for a description of that specific field.

Quick Reference Cards. These cards give you quick and easy access to the most common fax management features of the FaxUtil, Microsoft Exchange, Lotus Notes, and Web Client fax client applications.

RightFAX Training

Everyone knows that training plays a key role in the successful implementation of information technology. RightFAX training gives you the skills to optimize your RightFAX solution. Our comprehensive technical, administrative and user training programs produce full utilization and understanding of RightFAX products. Regular classes are held at the state-of-the-art RightFAX Training Center in Tucson, Arizona throughout the year, or you can choose the convenience of training at your own location or at various regional locations. Customized training is also available to meet your specific needs. Training materials and computer-based training tools are also available. For more information on RightFAX training, please visit our Web site at www.rightfax.com/training, or call us at (520) 320-7098 and let us help you develop a customized training plan for your organization.

Document Conventions

Fonts and icons are used consistently throughout this guide to make it as easy as possible to read and understand.

Italics are used whenever referring to another chapter or section in this guide, or when referring to other user guides.

Boldface is used to indicate a dialog or menu name, a field or option listed on a dialog, or a menu option.

"Quotes" are used to indicate the name of an item in a list box or pull-down menu on a dialog.

`Courier font` is used to indicate text entered in a dialog field or on a command line, or written in an ASCII or other text file. This font is also used to set examples off from the surrounding text. If the text contains variables (e.g., a command line with variable parameters), the variables are ***`Italicized`*** and then described in the subsequent paragraph.

Directory and file names are written in CAPITALS to set them apart from the surrounding text. Directory names are always preceded with a backslash character (\) and file names always include both the name and extension.

Special notes, warnings, and tips like this one are displayed throughout this guide. Each is preceeded by an icon indicating the importance of the information.

Special notes, tips, and warnings appear throughout this guide and always appear in the left margin like the example here. An icon at the beginning of the paragraph indicates its purpose. A lower-case "i" indicates a note or other information that may only be important under certain circumstances. A question mark indicates a useful tip or troubleshooting information. An exclamation point indicates a warning. Warnings should always be read carefully before proceeding.

Technical Support

Your *Customer Support Guide* includes detailed information about the support options available to RightFAX customers. Please fill out the *RightFAX Software Warranty & Registration Card* and return it immediately. If you have technical questions, please contact your organization's RightFAX administrator or network administrator before calling our technical support department.

RightFAX Technical Support:
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Suite 120
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Voice: (520) 320-7070
Fax: (520) 321-7461
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5:00 a.m. to 6:00 p.m. MST, Monday through Friday
6:00 a.m. to 6:00 p.m. MST, Saturday

Support Plan Sales & Administration: (520) 320-7000

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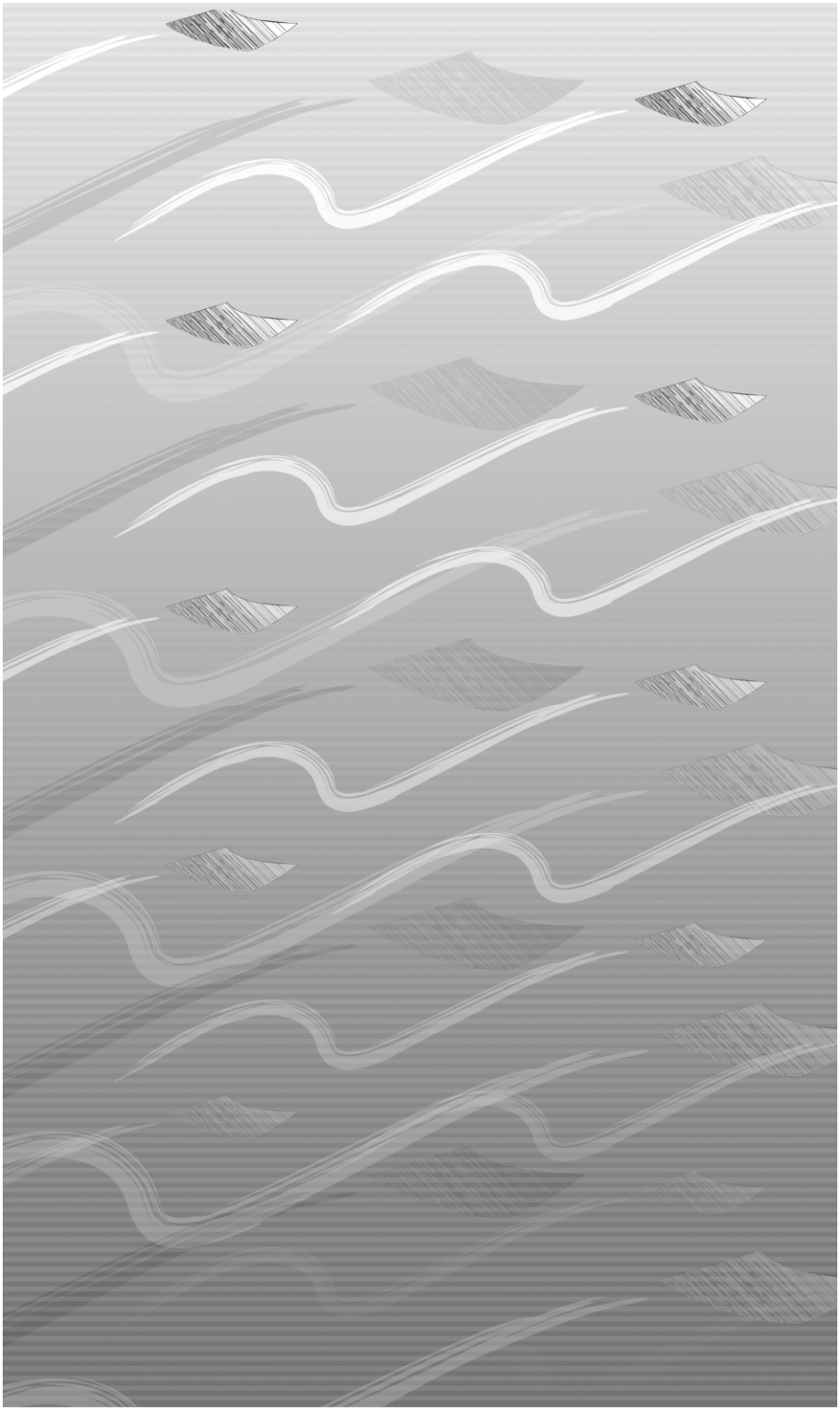

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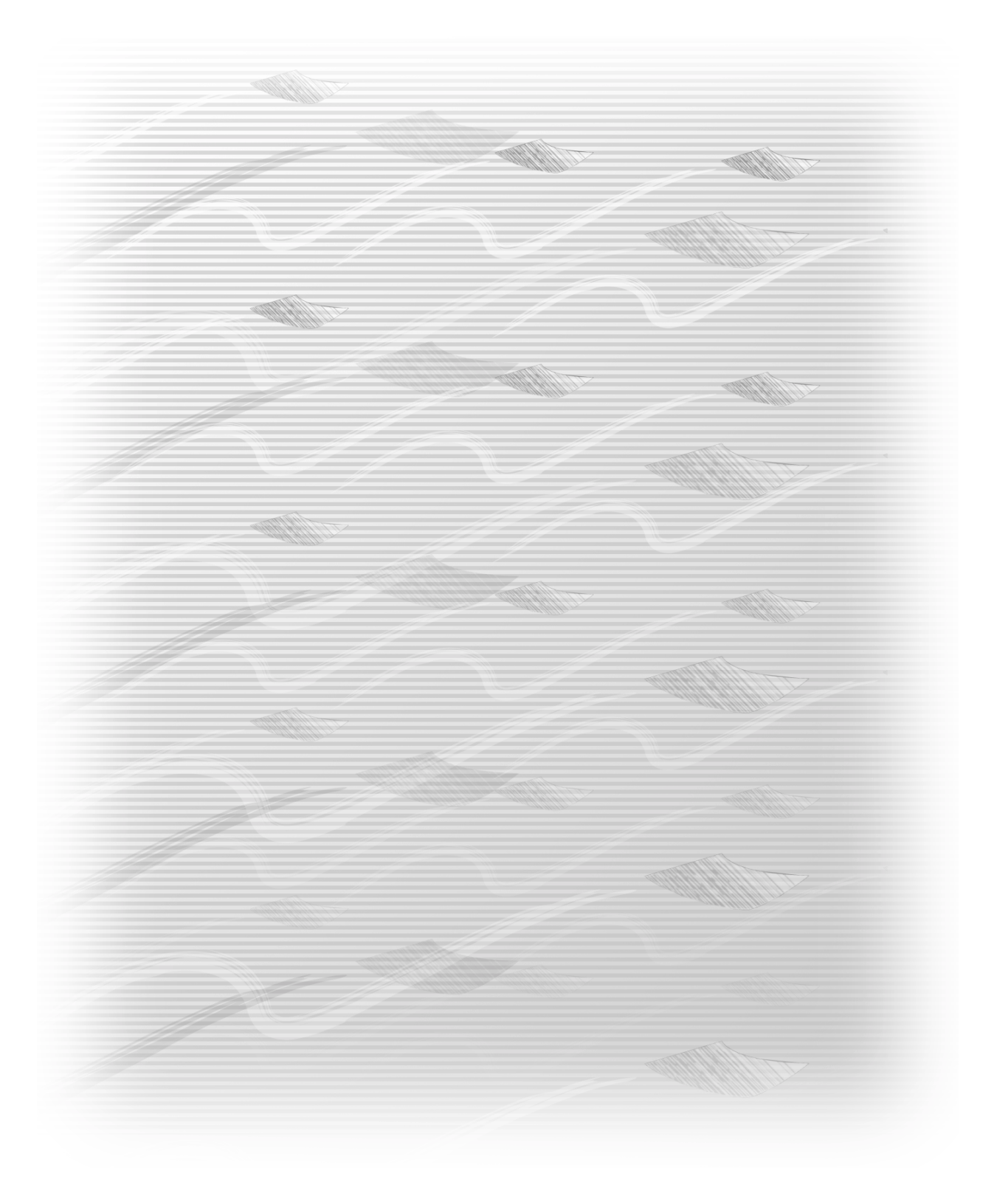

Chapter 2: Brooktrout Analog Boards

Static discharge can severely damage your fax board. Exposing your fax board to static electricity will void all warranties on the board. Always use caution when handling fax boards.

Before mounting any fax board into the RightFAX server, you must first configure the board to operate correctly and without conflicts on that machine. If you are installing multiple fax boards of the same or different types, watch for special notes specific to such instances. Be sure to record the I/O addresses, DMA channels, and interrupts selected for each installed fax board; you may need this information when configuring the fax boards within RightFAX.

Brooktrout TR112 Fax Boards

The TR112 series are two-channel analog fax boards supported by RightFAX but no longer manufactured by Brooktrout. These boards require you to set an I/O address and hardware interrupt before installing. For details on these settings see *Brooktrout TR114 Series Analog Fax Boards* (below).

Please refer to your Brooktrout documentation for instructions on setting the I/O and hardware interrupts on your fax board.

Brooktrout TR114 Series Analog Fax Boards

The TR114 family of analog boards consists of models with up to four channels of some combination of loop-start and/or DID lines. Instructions in this chapter apply to all supported TR114 analog boards unless otherwise noted. If you are installing digital fax boards see *Chapter 3: Brooktrout Digital Boards* on page 25. RightFAX currently supports the following TR114 series analog fax boards:

Table 2a: Supported TR114 Series Analog Fax Boards

Board Model	Functionality
TR114-I2C	One loop-start and one DID channel, ISA send/DID auto-receive. Requires Tellabs 8012 power supply.
TR114-I2D	Two DID channels, ISA. DID auto-receive only. Requires Tellabs 8012 power supply.
TR114-I2L	Two loop-start channels, ISA send/receive.
TR114-I4C	Two loop-start and two DID channels, ISA send/DID auto-receive. Requires Tellabs 8012 power supply.
TR114-I4D	Four DID channels, ISA. DID auto-receive only. Requires Tellabs 8012 power supply.
TR114-I4L	Four loop-start channels, ISA send/receive.
TR114-P2C	One loop-start and one DID channel, PCI send/DID auto-receive. Requires Tellabs 8012 power supply.
TR114-P2D	Two DID channels, PCI. DID auto-receive only. Requires Tellabs 8012 power supply.
TR114-P2L	Two loop-start channels, PCI send/receive.
TR114-P4C	Two loop-start and two DID channels, PCI send/DID auto-receive. Requires Tellabs 8012 power supply.
TR114-P4D	Four DID channels, PCI. DID auto-receive only. Requires Tellabs 8012 power supply.
TR114-P4L	Four loop-start channels, PCI send/receive.

In Brooktrout's naming scheme, "TR114" is the board model, "I" or "P" indicates ISA or PCI, followed by the number of channels, then a letter indicating the type of phone line interface (loop-start, DID, or combination).

TR114 boards that support DID interfaces require an external -48V DC power supply. Brooktrout recommends the Tellabs 8012 regulated power supply which provides 250 mA of current. This must be purchased separately from your fax board. Also required are phone cables of the appropriate type for your phone lines (RJ-45 or RJ-11).

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

Switch #1 on the SW1 unit should be set to the ON position for one and only one TR114 card. If you have multiple TR114 boards installed, this switch should be set to ON on one card and set to OFF on all the others.

Before installing the board into the RightFAX server, you must manually set the base I/O address of the board. The base I/O address is set on the board using switches 2 through 8 on the unit marked "SW1" on the fax board. Please refer to your Brooktrout documentation for the location of the SW1 unit on your particular fax board.

The first fax channel on the board uses an address four greater than the base address, and each channel after that uses an address four greater than the previous one. For example, if a TR114-I4L has its base address set to 260 hex, the four fax channels on the board use addresses 264, 268, 26C, and 270 hex. The recommended (factory set) base address for your first TR114 board is 260 hex. If you have multiple boards installed, be careful not to assign overlapping I/O addresses.

Table 2b lists commonly used base address settings for TR114 fax boards. Using these addresses may make it easier to prevent overlapping of I/O addresses when you have multiple boards installed.

Table 2b: TR114 Switch Settings for Commonly Used Base I/O Addresses

Base I/O Address	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
100	On	On	On	On	On	Off	On
140	On	On	On	Off	On	Off	On
180	On	On	On	On	Off	Off	On
200	On	On	On	On	On	On	Off
220	On	On	Off	On	On	On	Off
240	On	On	On	Off	On	On	Off
260	On	On	Off	Off	On	On	Off
280	On	On	On	On	Off	On	Off
2A0	On	On	Off	On	Off	On	Off
2C0	On	On	On	Off	Off	On	Off

Setting the Hardware Interrupt

The TR114 also requires you to configure an Interrupt setting. A jumper, which looks like a small plastic cap covering two wires, selects the interrupt.

Please refer to your Brooktrout documentation for the location of the interrupt header on your particular fax board.

All channels on the TR114 board and all other TR114 boards installed in the same computer share the same interrupt setting. If a TR114 is already installed and operating in your system and you add more TR114 boards, you must set the hardware interrupt on the new boards to the same value as the first board.

If you have a combination of ISA and PCI TR114 fax boards, you must set the interrupts used by your ISA cards as "ISA only" in your BIOS.

The default interrupt setting is 5, although any other interrupt setting can be used as long as it does not conflict with other devices on the computer. In some systems, interrupt 3 may cause a conflict with the second serial port and interrupt 4 may conflict with the first serial port. If all the TR114 boards in your system are installed in 16-bit slots, interrupts 10, 11, and 15 are often your best choices.

Installing the TR114 Board

Never insert a loop-start line into a DID port. Doing so will damage the fax board and void all warranties. If you have any doubts, make sure to test the phone line with a volt meter prior to connecting it to a DID fax port to ensure that no current exists on the line.

Once the TR114 fax board is configured for the proper base address and hardware interrupt, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. ISA TR114 boards may be installed into either an 8- or 16-bit slot in an ISA or EISA computer. PCI boards must be installed in a PCI bus master slot.

Once the fax board is properly installed, refer to your Brooktrout documentation for instructions on connecting the phone cables and optional power supply.

Brooktrout TruFax

The TruFax is a two-channel fax board supporting two loop-start telephone interfaces. The TruFax is a fixed function board that cannot be used in combination with TR112 or TR114 fax boards. Two standard phone cables with RJ-11 heads at each end are supplied with the TruFax board.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

Before installing the board into the RightFAX server, you must manually set the base I/O address of the board. The base I/O address is set on the board using switches 1 through 8 on the address selection dip switch unit on the fax board. Please refer to your Brooktrout documentation for the location of this unit on your board.

Each fax channel on the TruFax uses four consecutive I/O addresses. The address specified on the address selector switch defines the base I/O address for the first channel. The second fax channel on the board uses an address four greater than the first channel. For example, if the TruFax has its base address set to 140 hex, the two fax channels on the board use addresses 140 and 144 hex. If you have multiple TruFax boards installed, be careful not to assign overlapping I/O addresses.

Table 2c lists commonly used base address settings for TruFax fax boards. Using these addresses may make it easier to prevent overlapping of I/O addresses when you have multiple boards installed.

Table 2c: TruFax Switch Settings for Commonly Used Base I/O Addresses

Base I/O Address	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7	Switch 8
100	Off	On	Off	Off	Off	Off	Off	Off
108	Off	On	Off	Off	Off	Off	On	Off
110	Off	On	Off	Off	Off	On	Off	Off
118	Off	On	Off	Off	Off	On	On	Off
120	Off	On	Off	Off	On	Off	Off	Off
128	Off	On	Off	Off	On	Off	On	Off
130	Off	On	Off	Off	On	On	Off	Off
138	Off	On	Off	Off	On	On	On	Off
140	Off	On	Off	On	Off	Off	Off	Off
148	Off	On	Off	On	Off	Off	On	Off
150	Off	On	Off	On	Off	On	Off	Off
158	Off	On	Off	On	Off	On	On	Off
160	Off	On	Off	On	On	Off	Off	Off
168	Off	On	Off	On	On	Off	On	Off

Setting the Hardware Interrupt

The TruFax also requires you to configure an Interrupt setting. A jumper, which looks like a small plastic cap covering two wires, selects the interrupt. Please refer to your Brooktrout documentation for the location of the interrupt header on your TruFax board.

All channels on the TruFax board and all other TruFax boards installed in the same computer share the same interrupt setting. If a TruFax is already installed and operating in your system and you add more TruFax boards, you must set the hardware interrupt on the new boards to the same value as the first board.

The most common interrupt settings are 3, 4, and 5, although any other interrupt setting can be used as long as it does not conflict with other devices on the computer. In some systems, interrupt 3 may cause a conflict with the second serial port and interrupt 4 may conflict with the first serial port. If all of the TruFax boards in your system are installed in 16-bit slots, interrupts 10, 11, and 15 are often your best choices.

Installing the TruFax Board

Once the TruFax board is configured for the proper base address and hardware interrupt, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. TruFax boards may be installed into either an 8- or 16-bit slot in an ISA or EISA computer.

Once the fax board is properly installed, refer to your Brooktrout documentation for instructions on connecting the phone cables.

Testing Brooktrout Loop-Start Channels

If the RightFAX BoardServer module is running, you will need to stop it before performing these tests. To stop the BoardServer module, go to any command prompt and type:

```
net stop rfboard [Enter]
```

The FAXINIT Command

FAXINIT.EXE lets you confirm that your Brooktrout fax board I/O settings are correct. This command looks in a file called FAXINIT.CFG for a list of I/O addresses and then scans those addresses for Brooktrout fax channels.

Create an ASCII text file called FAXINIT.CFG on your RightFAX server in the \RFBOARD directory. List the I/O addresses of your Brooktrout fax channels in the format:

addrs *BaseI/0+4 NumChannels*

where *BaseI/0+4* is the base I/O of the board plus four (representing the first channel on the board), and *NumChannels* is the number of channels on the board. For example, the following entry is used for a four-channel board with a base I/O of 260:

```
addrs 264 4
```

When you have entered your fax channel I/O addresses for all installed boards, save and exit the file.

From an \RFBOARD command prompt, type:

```
faxinit faxinit.cfg [Enter]
```

This will attempt to confirm that the addresses you entered in FAXINIT.CFG correspond to Brooktrout fax channels. If the FAXINIT command cannot find the fax channels, you may have an address conflict. Check the I/O addresses of each board.

The FAX Command

FAX.EXE is a command line utility that can be used to send or receive faxes to test the functionality of Brooktrout fax boards and the phone lines connected to them. Once RightFAX successfully finds your fax channels using the FAXINIT command (page 19), you can attempt to send a test fax.

Connect a regular phone line to the loop-start jack on the board. Run the FAX command from your \RFBOARD directory using this syntax:

fax -u *ChannelNum* -s ,,*FaxNumber* test1.ipk

Where *ChannelNum* is the number of the channel you are testing (use 0 (zero) for the first channel, 1 for the second channel, etc.), and *FaxNumber* is the number of the fax machine where you will receive the test fax. Include

any additional digits or pauses you need to get an outside line or for any accounting codes. For example:

```
fax -u 0 -s ,,9,5559938 test1.ipk
```

If the test succeeds, you will see the following (the total lines displayed may be different depending on your fax resolution):

```
Remote ID: ‘’
Total pages: 1
Page: 1 bad lines 0 total lines 1058
Done
```

If you get this response, go to your fax machine and verify that the fax was received. If a problem occurs, one possible cause is an interrupt conflict. Verify that no other cards in your machine are using the same interrupt channel and try the test again.

Testing Brooktrout DID Channels

If you have a board with both loop-start and DID lines, you can perform a loopback test to verify the operation of both channels at the same time. In this test, you will send a fax from the loop-start channel to the DID channel. You can test only two channels at a time. Before you begin, connect your DID power supply to the DC input jack and the fax board.

For TR114 fax boards, connect the RJ-45 cable ends to the board and connect the RJ-11 ends to each other. (You will have two RJ-11 ends if you have a two channel and four ends if you have a four channel board.) Use a female-to-female connector to connect cable A to cable A and cable B to cable B. Do not connect the fax board to the wall jack.

Run the FAX.EXE command from your \RFBOARD directory using this syntax:

```
fax -u ChannelNum -r test2.ipk
```

Where *ChannelNum* is the number of the DID channel that will be receiving the test fax (use 0 (zero) for the first channel 1 for the second channel, etc.)

Open a second command window. From the \RFBOARD directory, run the command:

```
fax -u ChannelNum -s ,,1234 test1.ipk
```

Where *ChannelNum* is the number of the loop-start channel that will be sending the test fax (use 0 (zero) for the first channel, 1 for the second

channel, etc.) *1234* can be any four-digit number because the board will automatically answer whatever number is called.

Watch both command prompt windows. You will see the fax being sent and received by the board. If this test does not work, you may have a problem with your fax board or the configuration.

Testing DID-Only Boards

If your fax board has only DID lines, put the channel to test into receive mode by entering the following command from the \RFBOARD directory:

```
fax -u ChannelNum -r test2.ipk
```

Where *ChannelNum* is the number of the loop-start channel that will be sending the test fax (use 0 (zero) for the first channel, 1 for the second channel, etc.).

Connect a standard analog (not PBX) phone to the DID cable coming from the board that corresponds to the channel number you specified. Pick up the handset, dial any four digits, and listen for fax tone. If you hear fax tone but have problems receiving faxes on this channel, then the problem most likely lies with the phone company's configuration of your DID circuit.

If you do not hear the digits as you dial them, check that the DID power supply is properly connected to the board and plugged into a powered outlet.

If you do hear the digits as you dial them but do not hear fax tone, confirm that you have correctly plugged the cable that corresponds to the channel number you are testing into the phone.

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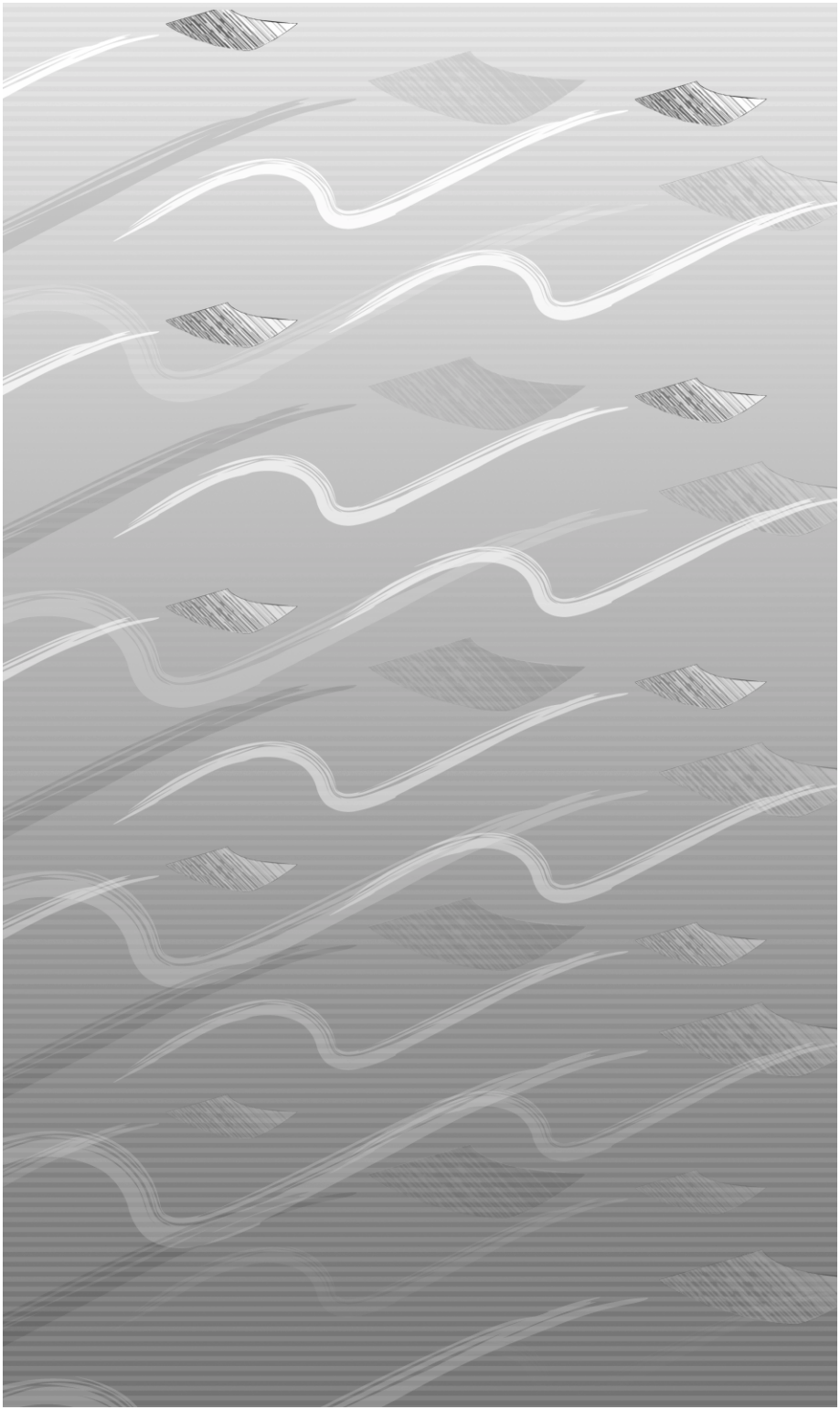

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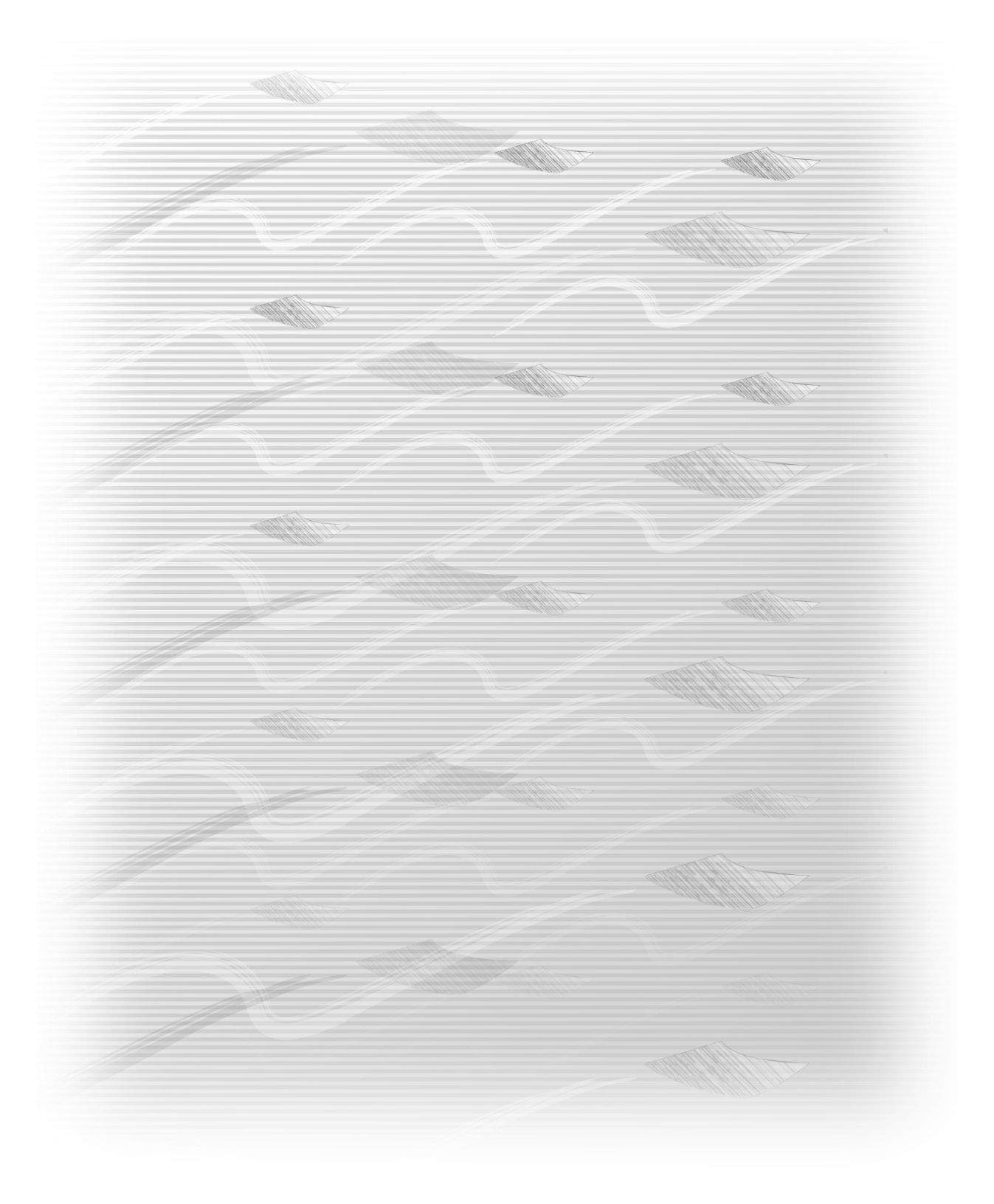

Chapter 3: Brooktrout Digital Boards

Before mounting any fax board into the RightFAX server, you must first configure the board to operate correctly and without conflicts on that machine. If you are installing multiple fax boards of the same or different types, watch for special notes specific to such instances. Be sure to record the I/O addresses, DMA channels, and interrupts selected for each installed fax board; you may need this information when configuring the fax boards within RightFAX.

Brooktrout TR114 Series Digital Fax Boards

The TR114 family of digital fax boards consists of models with up to 16 channels for your PRI-T1, T1, PRI-E1, E1, or BRI telephone lines. Instructions in this chapter apply to all supported TR114 digital boards unless otherwise noted. If you are installing analog fax boards see *Chapter 2: Brooktrout Analog Boards* on page 13. RightFAX currently supports the following TR114 series digital fax boards:

Table 3a: Supported TR114 Series Digital Fax Boards

Board Model	Functionality
TR114-I12V	Twelve channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I16V	Sixteen channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I2P	Two channels, PEB only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I2V	Two channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I4P	Four channels, PEB only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I4V	Four channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-I8V	Eight channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.

Table 3a: Supported TR114 Series Digital Fax Boards (Continued)

Board Model	Functionality
TR114-I8V+T1	Eight channels, MVIP only. ISA T1 digital fax card. TRNIC send/DID auto-receive. Does *not* require TRNIC network interface card.
TR114-P16V	Sixteen channels, MVIP only. PCI T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-P4V	Four channels, MVIP only. PCI T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-P8V	Eight channels, MVIP only. PCI T1 digital fax card. TRNIC send/DID auto-receive. Requires TRNIC network interface card.
TR114-P8V+T1	Eight channels, MVIP only. PCI T1 digital fax card. TRNIC send/DID auto-receive. Does *not* require TRNIC network interface card.

Static discharge can severely damage your fax board. Exposing your fax board to static electricity will void all warranties on the board. Always use caution when handling fax boards.

In Brooktrout's naming scheme, "TR114" is the board model, "I" or "P" indicates ISA or PCI, followed by the number of channels, then a letter indicating the type of bus used to communicate with network interface card (MVIP or PEB). "+T1" in the board's model number indicates that the board includes an on-board digital interface and does not require a separate "network interface card" (described below).

For information on configuring the base I/O address, interrupt header, and MVIP settings of your digital fax board and network interface card, please refer to each board's hardware guide.

Supported Network Interface Cards

Each of the supported digital fax boards must be connected to a separate "network interface card" which provides the digital interface appropriate to your phone line type. The network interface card is physically connected to one or more of your digital fax boards via an MVIP or PEB data bus. (PEB bus fax boards are supported only for T1 interfacing in conjunction with the Brooktrout TRNIC-I24T and Dianatel EA24 network interface cards.)

Table 3b lists all network interface cards supported by RightFAX including the type(s) of digital phone line supported by the card.

Table 3b: Supported Network Interface Cards

Board Model	PRI-T1	T1	PRI-E1	E1	BRI
Brooktrout TRNIC I24T	No	Yes	No	No	No
Brooktrout TRNIC P24T	No	Yes	No	No	No
Dianatel EA24	No	Yes	No	No	No
Netaccess BRI-ISA8	No	No	No	No	Yes
Netaccess ISALC-1E	No	No	Yes	Yes	No
Netaccess ISALC-1T	Yes	Yes	No	No	No
Netaccess ISALC-1T-csu	Yes	Yes	No	No	No
Netaccess ISALC-2E	No	No	Yes	Yes	No
Netaccess ISALC-2T	Yes	Yes	No	No	No
Netaccess ISALC-2T-csu	Yes	Yes	No	No	No
Netaccess PCI-24V	Yes	Yes	No	No	No
Netaccess PCI-24V-csu	Yes	Yes	No	No	No
Netaccess PCI-32V	No	No	Yes	Yes	No
Netaccess PCI-48V	Yes	Yes	No	No	No
Netaccess PCI-48V-csu	Yes	Yes	No	No	No
Netaccess PCI-64V	No	No	Yes	Yes	No

In addition, RightFAX supports these Brooktrout fax boards which include built-in BRI interface (currently supported in Europe only):

- TR114+P2BRI
- TR114+P4BRI
- TR114+I2BRI
- TR114+I4BRI

Installing Fax and Network Interface Cards

If you are combining digital fax boards with network interface cards, the boards should all be installed to your RightFAX server in a layout that allows easy connection of the MVIP ribbon cable between the boards.

You can attach your network interface card to as many fax boards as it has channels available. For example, a network interface card with 24 channels

can be connected via MVIP ribbon cable to three separate fax boards with eight channels each. In addition, you can install and configure two separate network interface cards per RightFAX server. The network interface card and fax board(s) do not need to be connected in any particular sequence on the MVIP cable.

Configuring RightFAX to Recognize Fax and Network Interface Cards

Once you have installed and connected the network interface card(s) and digital fax board(s), run the RightFAX BoardServer applet from the Control Panel. Click the **Add Brooktrout Board** button and add each of your installed digital fax boards to the list under **Global Board Settings**. Highlight each installed board in the list and complete its configuration information. For more information on configuring fax boards in the BoardServer applet, please refer to the *RightFAX Administrator's Guide*.

After you have set up your fax board(s) in the BoardServer applet, you must configure RightFAX to recognize your network interface card(s). When you add a digital Brooktrout fax board in the BoardServer applet, a new option, "Digital Configuration," appears at the top of the tree in the left pane. Click this option to run the Digital Configuration Wizard. Complete each of the fields according to your network interface card type(s). For a description of any field, click the **[?]** icon in the top right corner of the dialog and then click on the field you want help with. Options that appear grayed-out either do not apply to the board type or settings you have selected, or the settings are not optional.

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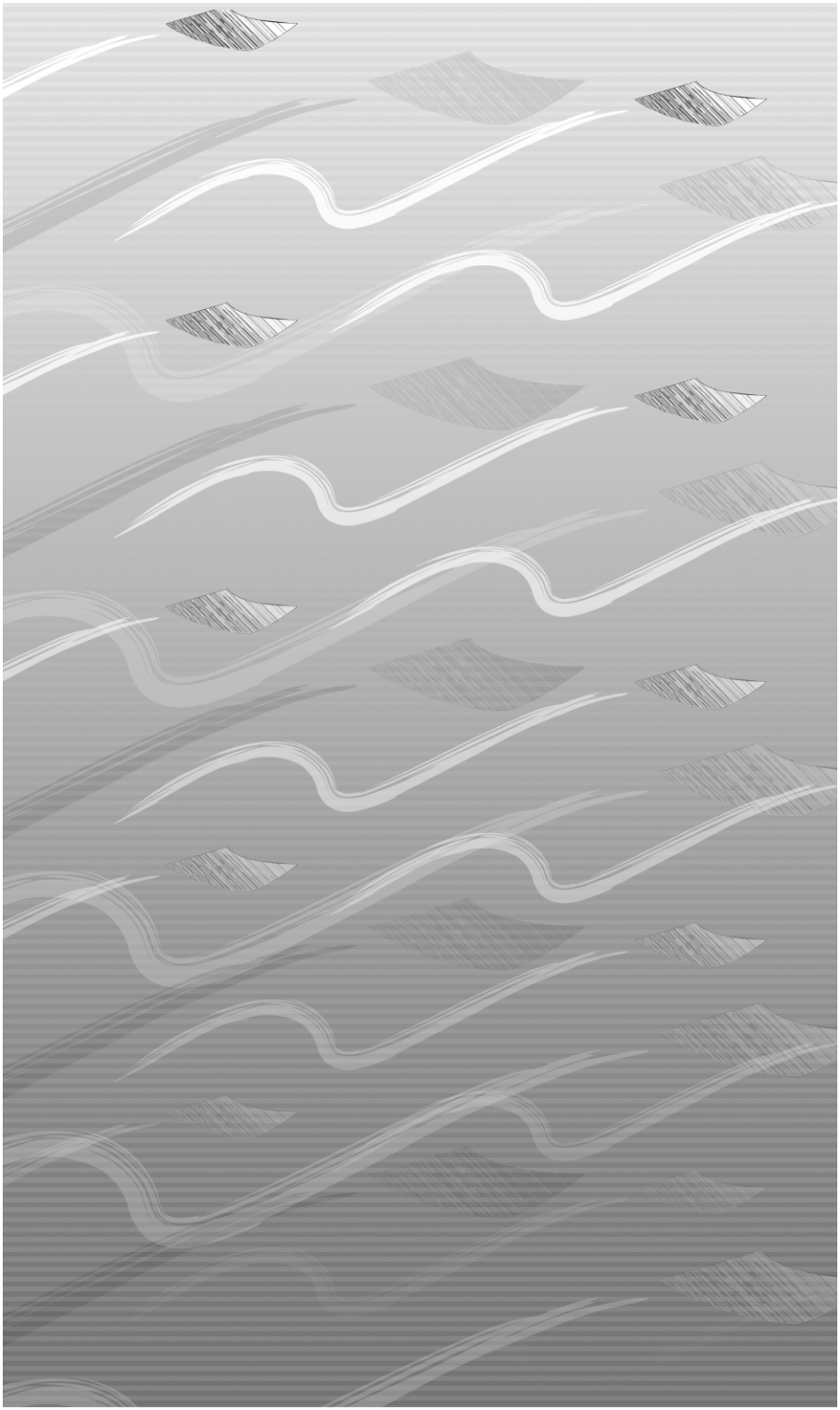

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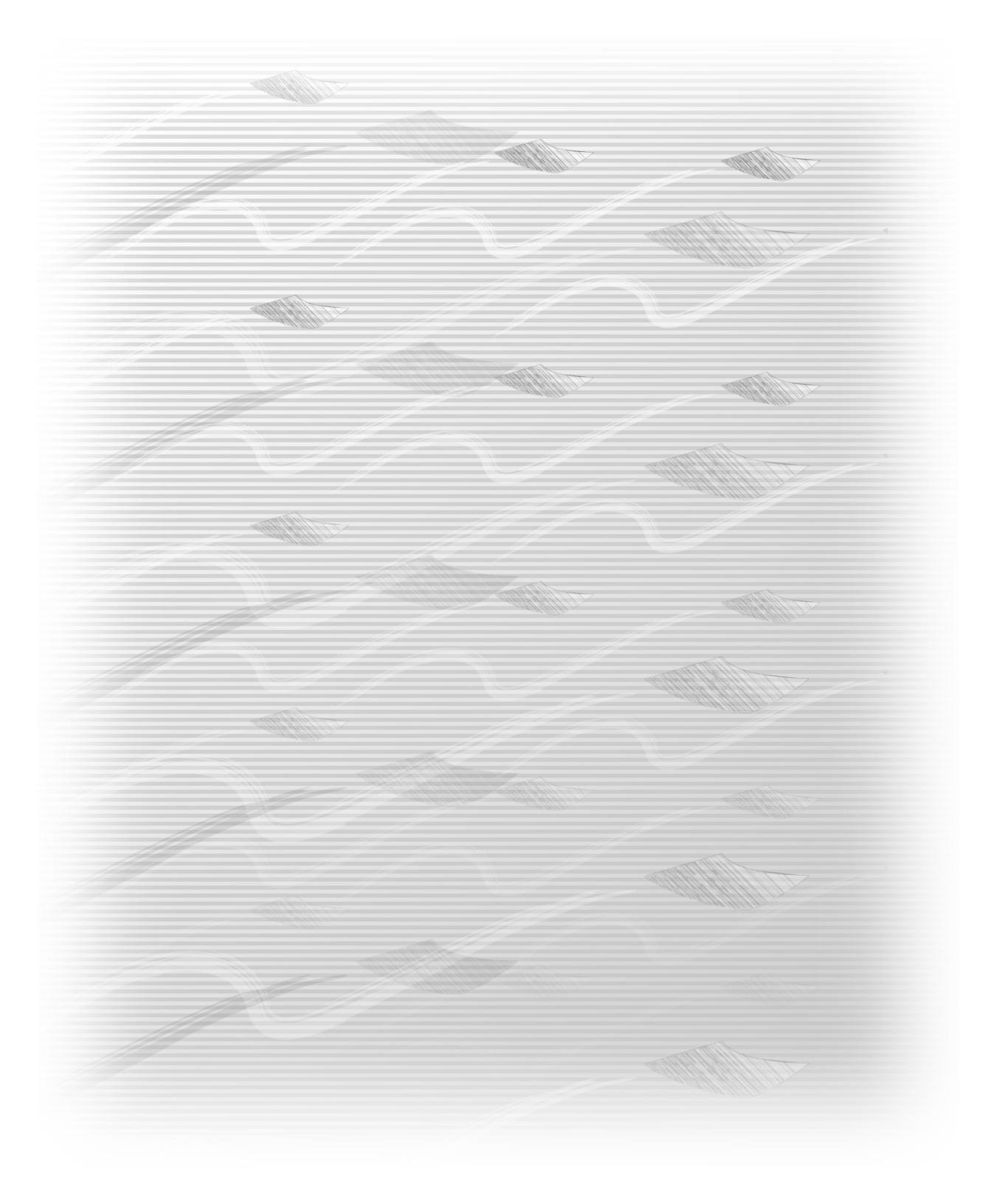

Chapter 4: Dialogic Boards

Static discharge can severely damage your fax board. Exposing your fax board to static electricity will void all warranties on the board. Always use caution when handling fax boards.

Before mounting any fax board into the RightFAX server, you must first configure the board to operate correctly and without conflicts on that machine. If you are installing multiple fax boards of the same or different types, watch for special notes specific to such instances. Be sure to record the I/O addresses selected for each installed fax board; you may need this information when configuring the fax boards within RightFAX.

Do not load any Dialogic® software included with the fax board. RightFAX software includes all the necessary drivers and programs for your fax board.

Dialogic CPi/100

The CPi/100 is a half-sized, single-channel, loop-start fax board. Up to 24 CPi/100 boards can be installed on a single machine. A standard phone cable with RJ-11 connectors at each end is included with each CPi/100 board.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

All fax boards are shipped from Dialogic with a default I/O address of 350 hex. If more than one fax board is installed in the same machine, this may result in an I/O address conflict. You must set each installed Dialogic board to a unique I/O address.

The I/O address is set with six DIP switches, located on the mounting bracket of the CPi/100 fax board. Any changes to the I/O address DIP switches must be made before the fax board in installed. DIP switch #6 is not used and should always remain in the OFF position. *Table 4a* contains possible I/O addresses and switch settings for the CPi/100.

Table 4a: CPi/100 Switch Settings for I/O Addresses

Channel Number	I/O Address	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6
0	350	Off	Off	Off	Off	Off	Off
1	360	On	Off	Off	Off	Off	Off
2	370	Off	On	Off	Off	Off	Off
3	250	On	On	Off	Off	Off	Off
4	260	Off	Off	On	Off	Off	Off
5	270	On	Off	On	Off	Off	Off
6	150	Off	On	On	Off	Off	Off
7	160	On	On	On	Off	Off	Off
8	100	Off	Off	Off	On	Off	Off
9	104	On	Off	Off	On	Off	Off
10	108	Off	On	Off	On	Off	Off
11	10C	On	On	Off	On	Off	Off
12	110	Off	Off	On	On	Off	Off
13	114	On	Off	On	On	Off	Off
14	118	Off	On	On	On	Off	Off
15	11C	On	On	On	On	Off	Off
16	280	Off	Off	Off	Off	On	Off
17	284	On	Off	Off	Off	On	Off
18	288	Off	On	Off	Off	On	Off
19	28C	On	On	Off	Off	On	Off
20	290	Off	Off	On	Off	On	Off
21	294	On	Off	On	Off	On	Off
22	298	Off	On	On	Off	On	Off
23	29C	On	On	On	Off	On	Off

Installing the CPi/100 Board

Once the CPi/100 fax board is configured for the proper I/O address, you are ready to install it into the computer. Always turn the computer off before

inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. Dialogic CPi/100 boards may be installed into either an 8- or 16-bit slot.

Once the fax board is properly installed, refer to your Dialogic documentation for instructions on connecting the phone cables.

Dialogic CPD

The CPD is a single-channel DID fax board that requires an external -48V DC power supply. Dialogic recommends the Tellabs 8012 regulated power supply which provides 250 mA of current. This must be purchased separately from your fax board. The CPD also includes a standard phone cable with RJ-11 connectors at each end.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

All fax boards are shipped from Dialogic with a default I/O address of 350 hex. If more than one fax board is installed in the same machine, this may result in an I/O address conflict. You must set each installed Dialogic board to a unique I/O address.

The I/O address is set on the board using switches 1 through 6 on the unit marked "SW1" on the fax board. Please refer to your Dialogic documentation for the location of the SW1 unit on your particular fax board. Any changes to the I/O address DIP switches must be made before the fax board is installed. *Table 4b* contains possible I/O addresses and switch settings for the Dialogic CPD.

Table 4b: CPD Switch Settings for I/O Addresses

Channel Number	I/O Address	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6
0	350	Off	Off	Off	Off	Off	Off
1	360	On	Off	Off	Off	Off	Off
2	370	Off	On	Off	Off	Off	Off
3	250	On	On	Off	Off	Off	Off
4	260	Off	Off	On	Off	Off	Off
5	270	On	Off	On	Off	Off	Off
6	150	Off	On	On	Off	Off	Off

Table 4b: CPD Switch Settings for I/O Addresses (Continued)

Channel Number	I/O Address	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6
7	160	On	On	On	Off	Off	Off
8	100	Off	Off	Off	Off	Off	On
9	104	On	Off	Off	Off	Off	On
10	108	Off	On	Off	Off	Off	On
11	10C	On	On	Off	Off	Off	On
12	110	Off	Off	On	Off	Off	On
13	114	On	Off	On	Off	Off	On
14	118	Off	On	On	Off	Off	On
15	11C	On	On	On	Off	Off	On

Installing the CPD Board

Once the CPD fax board is configured for the proper I/O address, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. Dialogic CPD boards may be installed into either an 8- or 16-bit slot.

Once the fax board is properly installed, refer to your Dialogic documentation for instructions on connecting the phone cables.

Dialogic CPi/200

The CPi/200 is a two-channel loop-start fax board. A dual-connector Y-cable with two RJ-11 connector and one RJ-14 connector is included with each CPi/200 board.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

All fax boards are shipped from Dialogic with a default I/O address of 350 hex. If more than one fax board is installed in the same machine, this may result in an I/O address conflict. You must set each installed Dialogic board to a unique I/O address.

The I/O address is set on the board using switches 1 through 3 on the unit marked “SW1” on the fax board. Please refer to your Dialogic documentation

for the location of the SW1 unit on your particular fax board. Any changes to the I/O address DIP switches must be made before the fax board in installed. *Table 4c* contains possible I/O addresses and switch settings for the Dialogic CPi/200.

Table 4c: CPi/200 Switch Settings for I/O Addresses

I/O Address (Channel A)	Channel A Number	I/O Address (Channel B)	Channel B Number	Switch 1	Switch 2	Switch 3
350	0	360	1	Off	Off	Off
260	4	270	5	On	Off	Off
100	8	104	9	Off	On	Off
110	12	114	13	On	On	Off
280	16	284	17	Off	Off	On
290	20	294	21	On	Off	On
120	24	124	25	Off	On	On
130	28	134	29	On	On	On

Installing the CPi/200 Board

Once the CPi/200 fax board is configured for the proper I/O address, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. Dialogic CPi/200 boards must be installed into a 16-bit slot.

Once the fax board is properly installed, refer to your Dialogic documentation for instructions on connecting the phone cables.

Dialogic CPD/220

The voltage level supplied by the CPD/220 fax board is considered dangerous. Never operate the system when the chassis cover has been removed.

The CPD/220 is a four-channel fax board with two loop-start and two DID lines. The -48 volts required to power the DID lines is provided through the CPD/220 board, so there is no need for an external power supply. However, you must be careful not to overload your PC power supply. In general, if your PC has a 220 watt power supply, you can have a maximum of two CPD/220 boards in the same machine. If your PC has a 300 watt power supply, you can have a maximum of three CPD/220 boards in the same machine.

Two dual connector Y-cables are included with each CPD/220 board. One cable is labeled and configured for DID lines (miniature connector), the other for loop-start lines (RJ-11 connector). The cables are not interchangeable.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

All fax boards are shipped from Dialogic with a default I/O address of 350 hex. If more than one fax board is installed in the same machine, this may result in an I/O address conflict. You must set each installed Dialogic board to a unique I/O address.

The I/O address is set with six DIP switches, located on the mounting bracket of the CPD/220 fax board. Any changes to the I/O address DIP switches must be made before the fax board in installed. DIP switches 4 through 6 are not used and should always remain in the OFF position. *Table 4d* contains possible I/O addresses and switch settings for the CPD/220.

Table 4d: CPD/220 Switch Settings for I/O Addresses and Their Associated Physical Channels

I/O Address Channel A	I/O Address Channel B	I/O Address Channel C	I/O Address Channel D	Switch 1	Switch 2	Switch 3
350 (0)	360 (1)	370 (2)	250 (3)	Off	Off	Off
260 (4)	270 (5)	150 (6)	160 (7)	On	Off	Off
100 (8)	104 (9)	108 (10)	10C (11)	Off	On	Off
110 (12)	114 (13)	118 (14)	11C (15)	On	On	Off
280 (16)	284 (17)	288 (18)	28C (19)	Off	Off	On
290 (20)	294 (21)	298 (22)	29C (23)	On	Off	On
120 (24)	124 (25)	128 (26)	12C 27)	Off	On	On
130 (28)	134 (29)	138 (30)	13C (31)	On	On	On

Installing the CPD/220 board

Once the CPD/220 fax board is configured for the proper I/O address, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. To ensure that your system chassis is properly grounded, you *must* secure the CPD/220 board using the expansion slot mounting screw.

Never insert a loop-start line into a DID port. Doing so will damage the fax board and void all warranties. If you have any doubts, make sure to test the phone line with a volt meter prior to connecting it to a DID fax port to ensure that no current exists on the line.

The CPD/220 is shipped with two Y-cables. Insert the loop start line's RJ-11 connector into the port labeled "L" on the mounting bracket. Insert the DID line's connector into the port labeled "D" on the mounting bracket. To begin loop-start service, plug the loop-start A and B cables into the loop-start phone jacks. When you are ready to begin continuous DID service, plug the DID A and B cables into the DID phone jacks.

The DID line must be maintained at -48V or the phone company may "busy out" the line (effectively shutting down service). This means that the computer housing the CPD/220 must stay powered on. If you take the system off-line, you may have to notify the telephone company to re-engage the line.

Dialogic CP4/LSI

The CP4/LSI is a four-channel, loop-start fax board. Two dual-connector Y-cables each with two RJ-11 connector and one RJ-14 connector are included with each CP4/LSI board.

Setting the I/O Address

Do not use a pencil or any other object that conducts electricity to move the switches on the SW1 unit. Using graphite and other electrically conductive materials may cause severe damage to the board.

All fax boards are shipped from Dialogic with a default I/O address of 350 hex. If more than one fax board is installed in the same machine, this may result in an I/O address conflict. You must set each installed Dialogic board to a unique I/O address.

The I/O address is set on the board using switches 1 through 3 on the unit marked "SW1" on the fax board. Please refer to your Dialogic documentation for the location of the SW1 unit on your particular fax board. Any changes to the I/O address DIP switches must be made before the fax board in installed. *Table 4e* contains possible I/O addresses and switch settings for the Dialogic CP4/LSI.

Table 4e: CP4/LSI Switch Settings for I/O Addresses and Their Associated Physical Channels

I/O Address Channel A	I/O Address Channel B	I/O Address Channel C	I/O Address Channel D	Switch 1	Switch 2	Switch 3
350 (0)	360 (1)	370 (2)	250 (3)	Off	Off	Off
260 (4)	270 (5)	150 (6)	160 (7)	On	Off	Off
100 (8)	104 (9)	108 (10)	10C (11)	Off	On	Off
110 (12)	114 (13)	118 (14)	11C (15)	On	On	Off
280 (16)	284 (17)	288 (18)	28C (19)	Off	Off	On
290 (20)	294 (21)	298 (22)	29C (23)	On	Off	On
120 (24)	124 (25)	128 (26)	12C 27)	Off	On	On
130 (28)	134 (29)	138 (30)	13C (31)	On	On	On

Installing the CP4/LSI Board

Once the CP4/LSI fax board is configured for the proper I/O address, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. Dialogic CP4/LSI boards must be installed into a 16-bit slot.

Once the fax board is properly installed, refer to your Dialogic documentation for instructions on connecting the phone cables.

Dialogic CPi/400 PCI

The CPi/400 PCI is a four-channel, loop-start fax board. Two dual-connector Y-cables each with two RJ-11 connector and one RJ-14 connector are included with each CPi/400 PCI board.

Setting the Rotary Switch

You can install up to 6 CPi/400 boards in one RightFAX machine. If you have more than one CPi/400 installed, each must be assigned a unique board identification, so the software can match the telephone numbers to the channels that reside on each board.

The unique board identifier is specified by setting the rotary switch on the CPi/400 PCI board. You should change the rotary switch setting before the board is installed; however, if you need to change the setting after the board is installed, be sure to reboot your system afterwards for the change to take effect.

Insert a small flat-head screwdriver in the arrow slot in the center of the rotary switch. There are 16 available switch settings (from 0-F hex). The arrow in the center of the switch points to the current switch setting. Set each installed CPi/400 to a different switch setting.

Installing the CPi/400 Board

Once the CPi/400 fax board has an appropriate rotary switch setting, you are ready to install it into the computer. Always turn the computer off before inserting or removing any board. And take all necessary precautions to prevent static discharge whenever handling the fax board. Dialogic CPi/400 boards must be installed into a 16-bit slot.

Once the fax board is properly installed, refer to your Dialogic documentation for instructions on connecting the phone cables.

Dialogic Digital Phone Line Interfacing

Supported Dialogic digital fax boards include models with up to 30 channels for your PRI-T1, T1, PRI-E1, E1, or BRI telephone lines. RightFAX currently supports the following Dialogic digital fax resources:

Table 4f: Supported Dialogic Digital Fax Boards

Board Model	Functionality	Connect to Header Card via
CP4SC	Four channel ISA digital fax resource. SCbus/PEB. Requires compatible network interface card.	PEB
CP6SC	Six channel ISA digital fax resource. SCbus/PEB. Requires compatible network interface card.	PEB
CP12SC	Twelve channel ISA digital fax resource. SCbus/PEB. Requires compatible network interface card.	PEB

Digital fax resources may require special configuration to work with your specific phone line type. If you install RightFAX after installing the fax resource(s) and header card (recommended), a Dialogic board configuration dialog may prompt you for configuration information during the RightFAX server install.

If RightFAX has already been installed when you install the digital fax resource(s) and header card, you must run a separate Dialogic board configuration program. On the RightFAX server CD, run the program SETUP.EXE located in the \DIALOGIC directory using one of four parameters indicating the board and line type. Your options are:

`SETUP.EXE a` (to reconfigure for Dialogic analog boards)
`SETUP.EXE d` (digital CP4SC, CP6SC, or CP12SC only)
`SETUP.EXE i` (all ISDN except DM3 boards)
`SETUP.EXE m1` (DM3 with onboard header card only)

Static discharge can severely damage your fax board. Exposing your fax board to static electricity will void all warranties on the board. Always use caution when handling fax boards.

For information on the specific configuration settings for your particular board type(s), please refer to the documentation included with your fax and header boards. Your telephone service provider may also be able to answer specific questions about your phone lines and service type.

Once you have installed and configured the header card(s) and digital fax resource(s), run the RightFAX BoardServer applet from the Control Panel (described in the *RightFAX Administrator's Guide*), and configure your board and channel settings for RightFAX.

Testing Dialogic Boards

This test for both analog and digital fax channels confirms that your Dialogic board is installed and working properly and connected to a working phone line. In order to perform this test, the fax board(s) must have been installed and then successfully detected and configured in the RightFAX BoardServer applet (described in the *RightFAX Administrator's Guide*.)

To test your Dialogic fax board:

1. Stop the RightFAX BoardServer Module service.
2. Open a command window and change to the \RFBOARD directory.
3. Confirm that the Dialogic service is started by typing the following:

```
net start gammafax [Enter]
```

4. Type the following to send a test fax:

   sendfax ,,*FaxNumber* \rfboard\test001.tif *ChannelNum*

   Where *FaxNumber* is the number of a working fax machine (including any prefixes necessary to dial out of your phone system) and *ChannelNum* is the channel number to test.

Checking Channel Status

NTSPY.EXE is a utility that checks if the Dialogic drivers are running and communicating with all of the channels configured in RightFAX. From a command prompt, change to the \RFBOARD directory and run NTSPY.EXE. While running, NTSPY displays the realtime status of all of the configured channels. This can be useful in determining that all channels are working properly and can help to locate channel problems.

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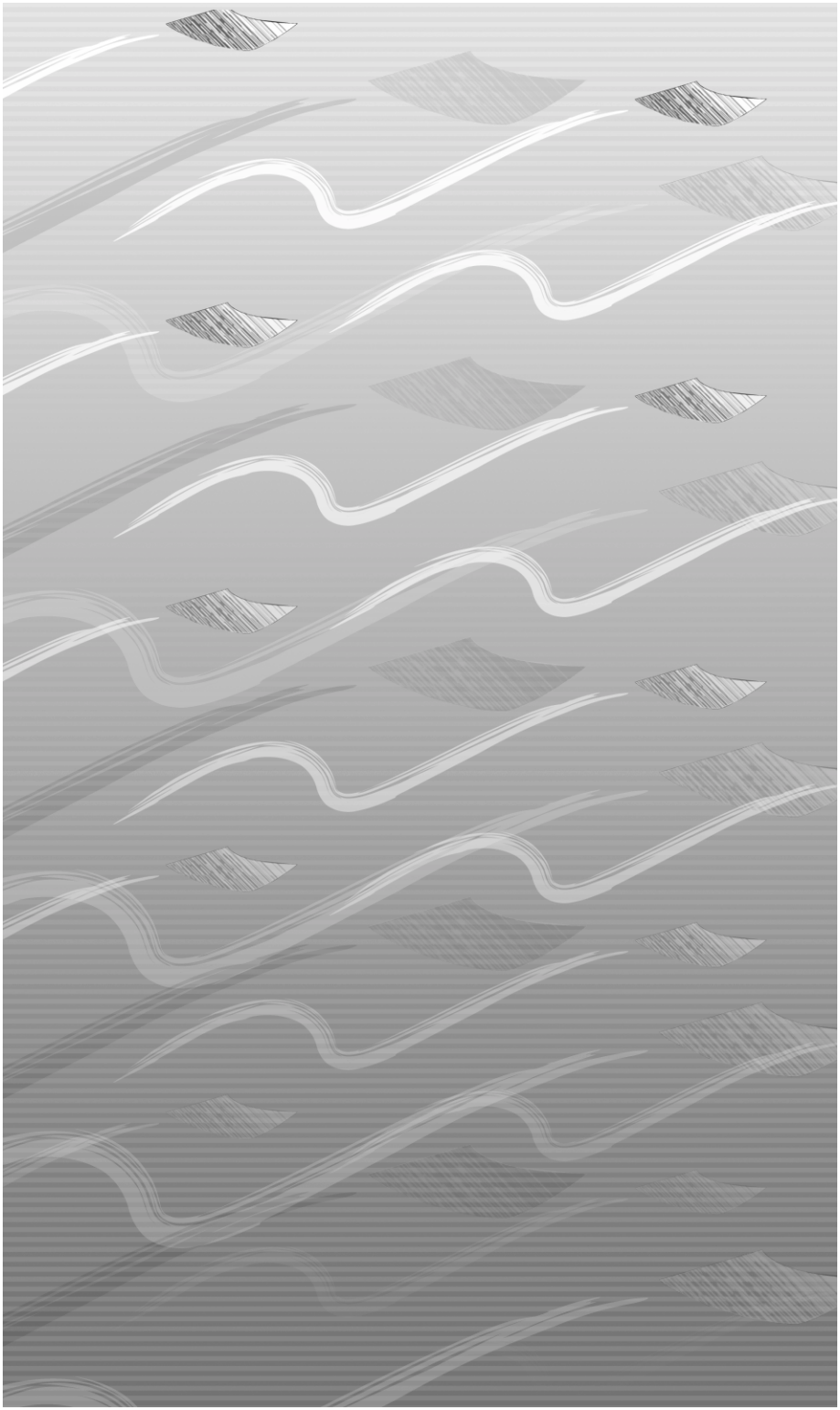

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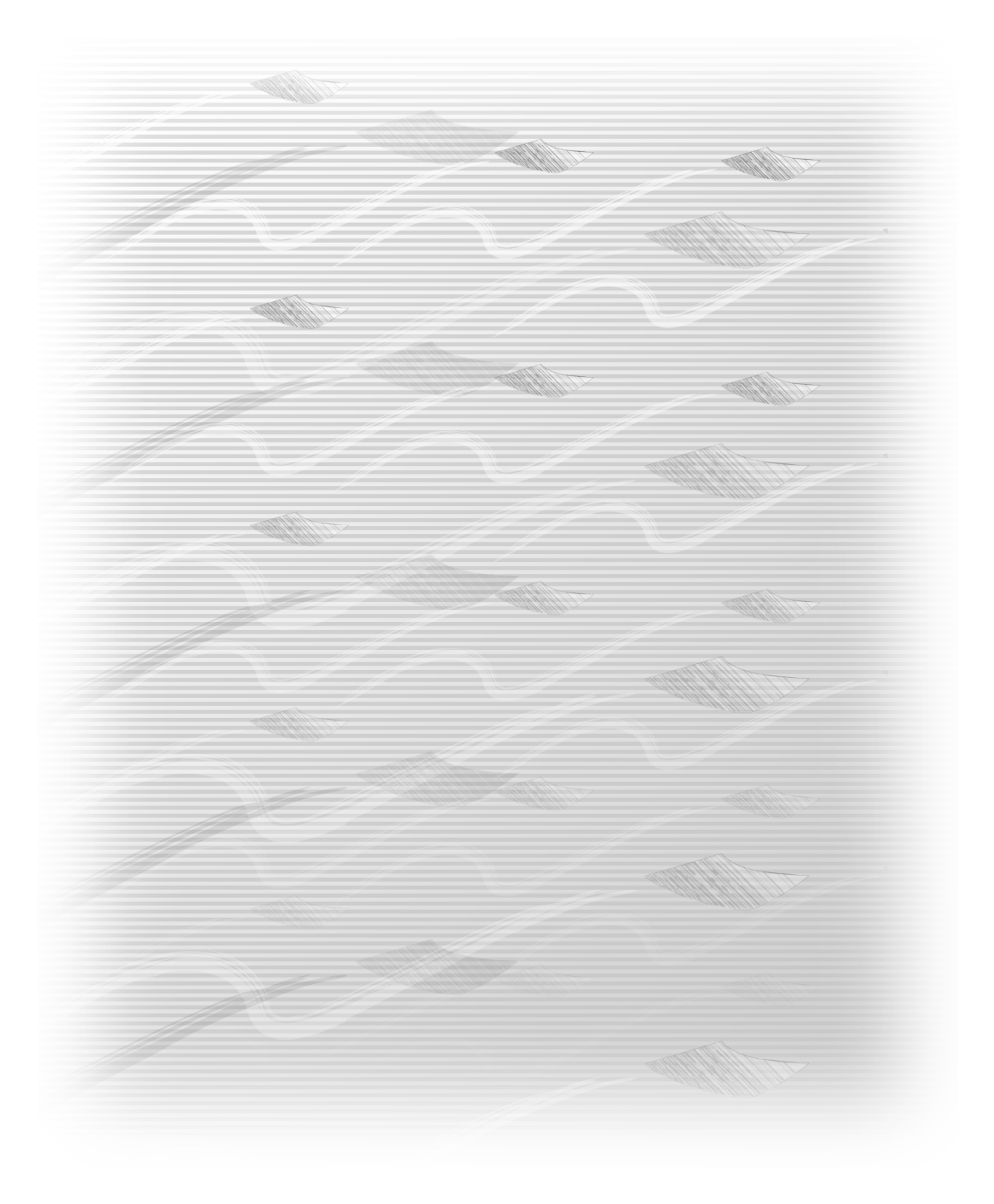


Appendix A: Working With DID Lines

DID (direct inward dialing) lines support inbound phone service only. Loop-start lines must be used for outbound service. A DID interface assigns more than one telephone number to a pair of wires (a telephone trunk). This enables RightFAX to provide automatic routing of faxes to the proper destination in a multi-user system.

For example, if a company is assigned one DID trunk and 100 telephone numbers ranging from 239-9400 to 239-9499, whenever any one of the numbers in this range is dialed and the DID trunk is available the telephone company connects to the trunk and transmits the last few digits (usually three or four) of the dialed number to the board. By detecting these digits, the fax boards can tell which one of the 100 numbers was actually dialed by the caller.

If the 100 telephone numbers correspond to 100 different users on a RightFAX system, each user could have a private fax telephone number. All with only one telephone trunk and one fax channel required.

If the trunk is busy receiving a fax for one of the users, callers to any of the other ninety-nine numbers encounter a busy signal. Because of this, you may require more than one DID trunk to which the range of DID telephone numbers is assigned. The number of trunks required depends on the traffic demands on the system.

Never insert a loop-start line into a DID port. Doing so will damage the fax board and void all warranties. If you have any doubts, make sure to test the phone line with a volt meter prior to connecting it to a DID fax port to ensure that no current exists on the line.

Since DID trunks work only for inbound calls, a fax messaging system using DID requires one or more additional loop-start telephone channels for sending faxes.

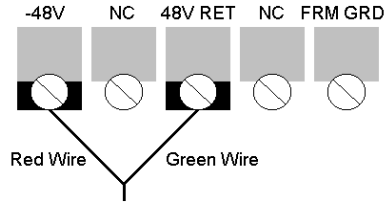
For DID telephone service, RightFAX recommends the following options be configured:

```
Trunk Type: Loop Start
Service Type: Wink Start
Signalling: DTMF (Touch-Tone)
Digit Length: Four
```

All DID fax boards must supply the DID trunk with continuous -48V DC power. Since no source of -48V DC exists in the computer, this power must be supplied from an outside source. A Tellabs 8012 (or equivalent) regulated power pack supplies the necessary power.

Connecting a Tellabs 8012 Power Supply to a DID Fax Board

1. Turn off the PC.
2. Find the contact block on the back of the Tellabs power supply, opposite the plug end.
3. Loosen the contact labelled "48V RET."
4. Locate the supplied power cord, consisting of two wires (one green and one red) with a plastic jack at one end and two metal prongs at the other end.
5. Connect the metal prong on the end of the green wire to the 48V RET contact and tighten the contact screw.
6. Loosen the contact labelled -48V.
7. Connect the metal prong on the end of the red wire to the -48V contact and tighten the contact screw. The connection should now look like this:



8. Plug the plastic plug on the other end of the power cable into the DC input jack in the fax board's mounting bracket.
9. Turn on the PC.
10. Plug the Tellabs 8012 power supply into the wall socket.

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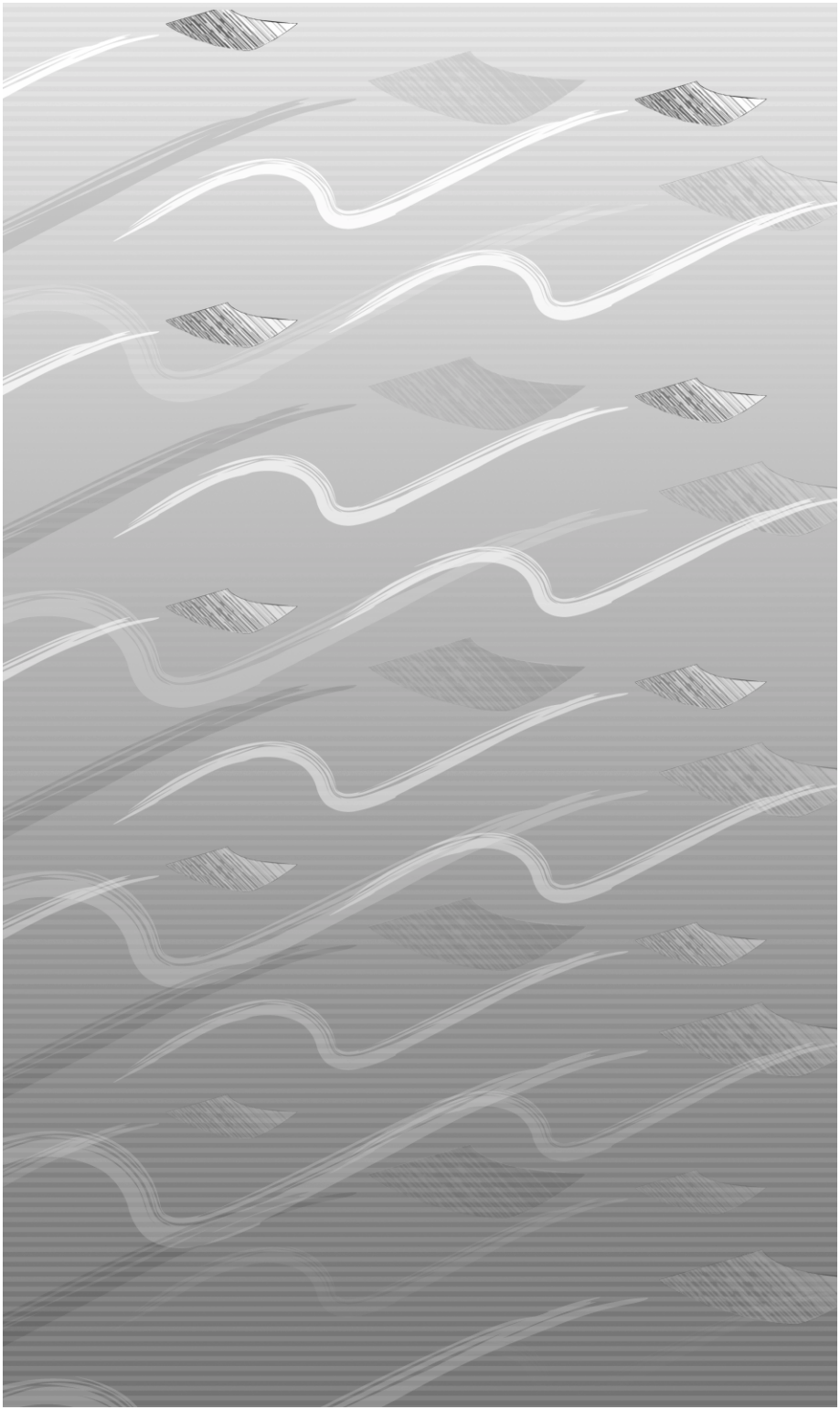

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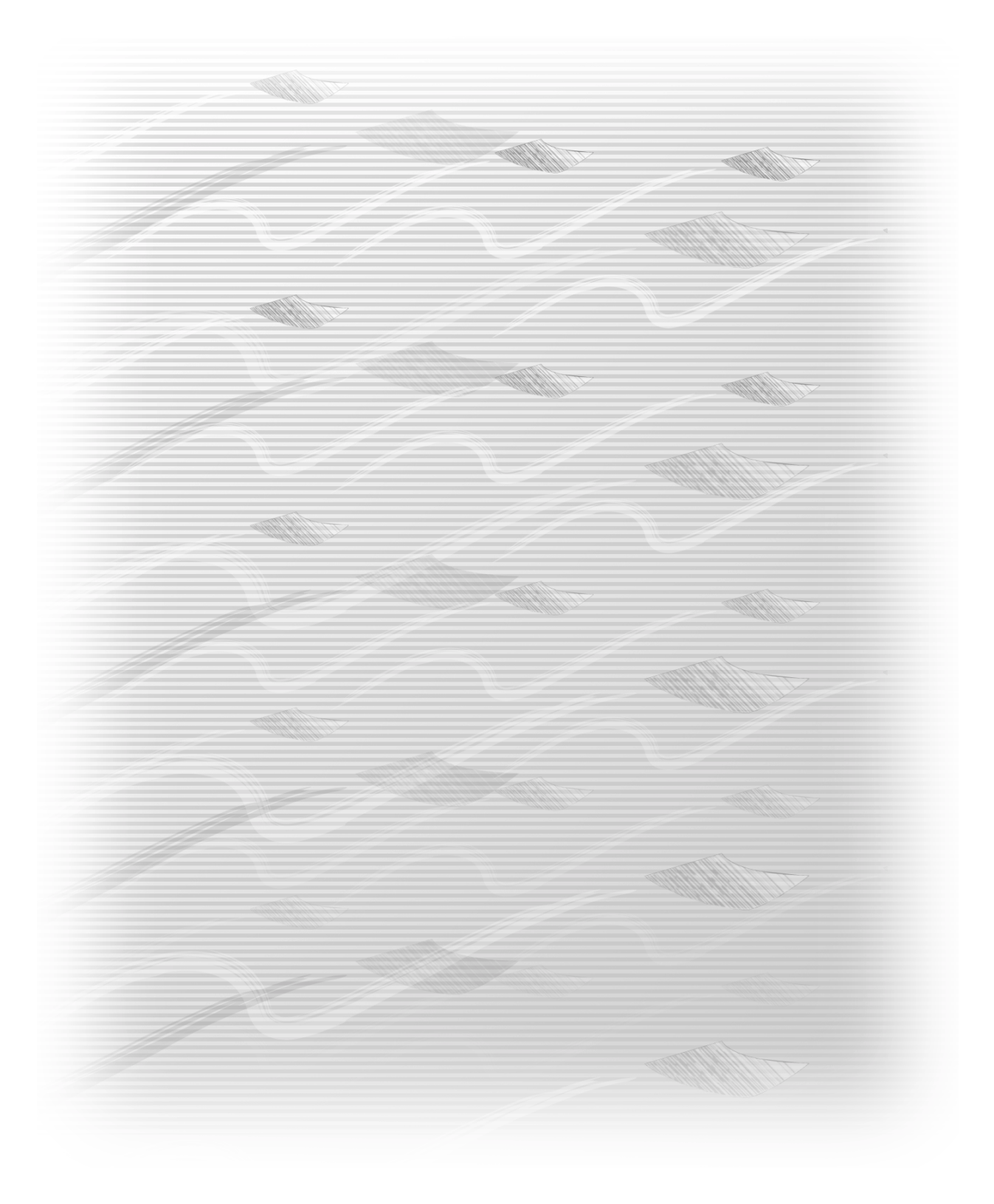

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