Dialogic®

Dialogic® Diva PRI, E1, T1 Media Boards

Installation Guide

Copyright and Legal Notice

Copyright © 2013 Dialogic Inc. All Rights Reserved. You may not reproduce this document in whole or in part without permission in writing from Dialogic Inc. at the address provided below.

All contents of this document are furnished for informational use only and are subject to change without notice and do not represent a commitment on the part of Dialogic Inc. and its affiliates or subsidiaries ("Dialogic"). Reasonable effort is made to ensure the accuracy of the information contained in the document. However, Dialogic does not warrant the accuracy of this information and cannot accept responsibility for errors, inaccuracies or omissions that may be contained in this document.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH DIALOGIC® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN A SIGNED AGREEMENT BETWEEN YOU AND DIALOGIC, DIALOGIC ASSUMES NO LIABILITY WHATSOEVER, AND DIALOGIC DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF DIALOGIC PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT OF A THIRD PARTY.

Dialogic products are not intended for use in certain safety-affecting situations. Please see http://www.dialogic.com/company/terms-of-use.aspx for more details.

Due to differing national regulations and approval requirements, certain Dialogic products may be suitable for use only in specific countries, and thus may not function properly in other countries. You are responsible for ensuring that your use of such products occurs only in the countries where such use is suitable. For information on specific products, contact Dialogic Inc. at the address indicated below or on the web at www.dialogic.com.

It is possible that the use or implementation of any one of the concepts, applications, or ideas described in this document, in marketing collateral produced by or on web pages maintained by Dialogic may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic does not provide any intellectual property licenses with the sale of Dialogic products other than a license to use such product in accordance with intellectual property owned or validly licensed by Dialogic and no such licenses are provided except pursuant to a signed agreement with Dialogic. More detailed information about such intellectual property is available from Dialogic's legal department at 9800 Cavendish Blvd., Suite 500, Montreal, Quebec, Canada H4M 2V9. Dialogic encourages all users of its products to procure all necessary intellectual property licenses required to implement any concepts or applications and does not condone or encourage any intellectual property infringement and disclaims any responsibility related thereto. These intellectual property licenses may differ from country to country and it is the responsibility of those who develop the concepts or applications to be aware of and comply with different national license requirements.

Dialogic, Dialogic Pro, Dialogic Blue, Veraz, Brooktrout, Diva, Diva ISDN, Making Innovation Thrive, Video is the New Voice, VisionVideo, Diastar, Cantata, TruFax, SwitchKit, SnowShore, Eicon, Eiconcard, NMS Communications, NMS (stylized), SIPcontrol, Exnet, EXS, Vision, PowerMedia, PacketMedia, BorderNet, inCloud9, I-Gate, ControlSwitch, NaturalAccess, NaturalCallControl, NaturalConference, NaturalFax and Shiva, among others as well as related logos, are either registered trademarks or trademarks of Dialogic Inc. and its affiliates or subsidiaries. Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at 9800 Cavendish Blvd., Suite 500, Montreal, Quebec, Canada H4M 2V9. Any authorized use of Dialogic's trademarks will be subject to full respect of the trademark guidelines published by Dialogic from time to time and any use of Dialogic's trademarks requires proper acknowledgement.

The names of actual companies and products mentioned herein are the trademarks of their respective owners.

Part number: 64-0611-01

Product Description

The Dialogic® Dialogic® Diva PRI, E1, and T1 Media Boards offer both digital and analog connectivity for the ISDN Primary Rate Interface (PRI), E1, and T1 lines. The Diva multiport Media Boards provide rich media processing capabilities for up to 120 voice channels over E1 interfaces or up to 96 voice channels over T1 interfaces.

This document provides the quick steps to install your Diva Media Board. The full Dialogic ® Diva Media Boards Installation Guide is available from the following URL.
http://www.dialogic.com/en/manuals/diva/diva_hw.aspx

Before You Begin

Protecting the Board from Damage

CAUTION: All computer boards are sensitive to electrostatic discharge. Handle all static-sensitive boards and components at a static-safe work area, and observe antistatic precautions at all times. If you are not familiar with ESD safety precautions, visit http://www.dialogic.com/support/hwinstall to learn more.

Unpacking the Board

Unpack the board according to the following steps:

1. Prepare a static-safeguarded work area.
2. Carefully remove the board from the shipping carton and anti-static packaging. Handle the board by the edges and avoid touching the board's components.
3. Lay the board on the static-dissipative work surface.

   Note: Place board in static-shielding bag when carrying board from station to station.

CAUTION: Do not remove the board from the anti-static packaging until you are ready to install it. Observe proper anti-static precautions at all times.

3. Installing the Board

WARNING! Unplug the equipment before performing the procedures described in this section. Failure to disconnect the power before you open the chassis can result in personal injury. Ensure that the system is disconnected from its power source and from all telecommunications links, networks, or modem lines whenever the chassis cover is removed. Do not operate the system with the cover removed.

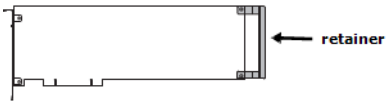
CAUTION: To avoid possible damage to the board, remove power from the computer before beginning installation. Observe proper anti-static precautions at all times while handling and installing the board.

Follow the steps below to install your Dialogic® Diva® Media Board and connecting it to your ISDN PRI, E1, or T1, line.

Insert your Diva Media Board into your computer as described below:

Note: You may need to consult your computer's manual during the installation of your Diva Media Board.

1. For your safety, disconnect all technical and peripheral devices and all energy sources from the computer.
2. Drain static electricity from your body by touching the metal chassis (the unpainted metal at the back of your computer).
3. Remove any cables if present, and the power cord from your computer.
4. Remove the cover of the computer as described in your computer's manual.
5. Locate a PCI or PCIe slot in your computer.
6. If there is a metal plate at the end of the slot, remove the screw or loosen the clip and remove the metal plate. Keep the screw for fastening your Diva Media Board.
7. If your Diva Media Board comes with a retainer, and space does not permit the use of the retainer, simply remove it before you insert the Diva Media Board. The retainer is only an installation aid, and does not add functionality to the board.

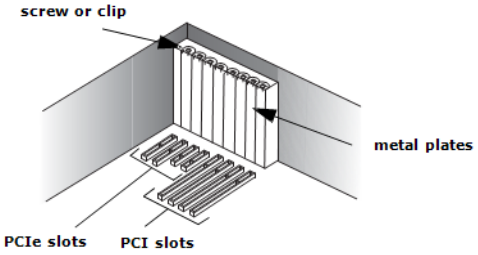


8. Before you insert your Diva Media Board, read the following safety instruction:

CAUTION: To avoid damaging your hardware, insert the Diva Media Board only into a PCI or PCIe slot, according to your board type. Inserting the Diva Media Board into any other type of slot can damage your board, your computer, or both.

Firmly insert the Diva Media Board into the selected slot. Make sure that the Diva board does not touch the CPU, memory modules, or other parts on the motherboard.

> **Note: Note:** Additionally to the PCI bus, Dialogic® Diva® V-2PRI PCI and V-4PRI PCI Media Boards have a H.100 bus on the board. The H.100 bus is not operational; therefore, only insert the Diva Media Board with the PCI bus into the computer.



9. Firmly secure the Diva Media Board with the screw or clip.

WARNING! For your safety, make sure that the Diva Media Board's bracket is properly secured to the PC's chassis by fastening the Diva Media Board with the screw or clip. This will ensure proper grounding and avoid personal injuries and damage to your computer, your Diva board, or both.

10.Replace the cover of the computer as described in your computer's manual.

Connect your Dialogic® Diva® PRI Media Board

Note: Diva PRI Media Boards, except Dialogic® Diva® V-xPRI PCIe HS/FS Media Boards, have a built-in CSU (Channel Service Unit) to protect the Diva Media Boards from damage due to power surges. However, you can also use an external CSU, which allows you to test your ISDN, E1, or T1 line.

The cable you use to connect the Diva PRI Media Board depends on how you want to apply the Diva Media Board:

- RJ45 to RJ45 for connection to an ISDN PRI, E1, or T1 line with an RJ45 jack or for connection as network termination to a PBX.
- RJ45 to open-ended cables for connection to your ISDN PRI, E1, or T1 line with open-ended wire connections or for back-to-back connection.

If the ISDN PRI or T1 line is installed with an RJ45 jack:

Use an RJ45 to RJ45 cable:

Diva PRI Media Board	Signals	RJ45 Terminal
Pin 1	Receive + (RX+)	Pin 1
Pin 2	Receive - (RX -)	Pin 2
Pin 4	Transmit + (TX +)	Pin 4
Pin 5	Transmit - (TX -)	Pin 5
shielded plug	overall shielded	shielded plug

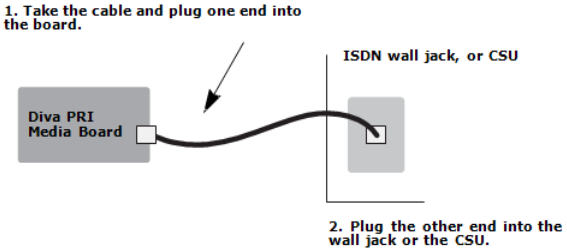
Note: For E1 Mode with 75 Ohm impedance, use an external 75 Ohm Balun Adapter. You can purchase such an adapter from specialized stores.

How you connect your Dialogic® Diva® PRI Media Board depends on the board type:

- To connect any Diva PRI Media Board, except the Dialogic® Diva® V-8PRI PCIe FS Media Board, follow “Any Diva PRI Media Board, except the Diva V-8PRI Media Board” below .
- To connect Diva V-8PRI PCIe FS Media Board, follow “Dialogic® Diva® V-1PRI PCIe HS, Diva V-2PRI PCIe HS, Diva V-4PRI PCIe HS, and Diva V-4PRI PCIe FS Media Boards”.

Any Diva PRI Media Board, except the Diva V-8PRI Media Board

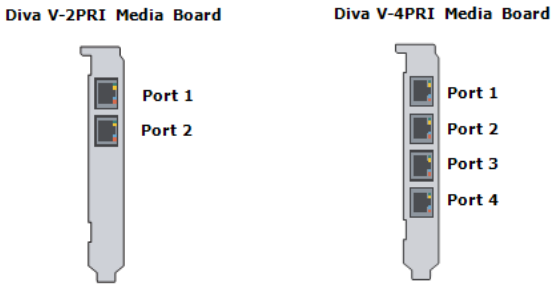
Connect any Diva PRI Media Board, except the Diva V-8PRI Media Board as shown in this graphic:



Note for Dialogic® Diva® V-2PRI PCI and V-4PRI PCI Media Boards:

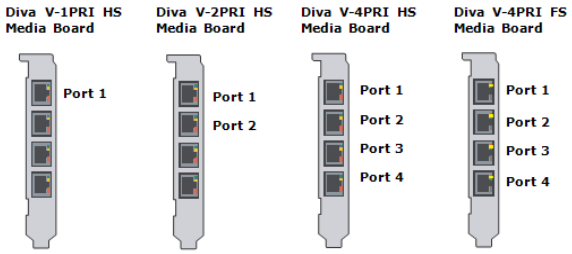
Diva V-2PRI PCI Media Boards have two ports and Diva V-4PRI PCI Media Boards have four ports for connecting to two or four separate ISDN PRI, E1, or T1 lines. Connect all two or four cables as described above. You can use any port; typically, you must specify the port number during

software configuration. The port numbers are shown below. The diagram is oriented with the edge connector pointing downwards.



Dialogic® Diva® V-1PRI PCIe HS, Diva V-2PRI PCIe HS, Diva V-4PRI PCIe HS, and Diva V-4PRI PCIe FS Media Boards

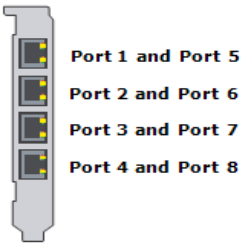
Diva V-xPRI PCIe HS and the Diva V-4PRI PCIe FS Media Boards have four ports. The "x" or the "4" stand for the activated ports; that means one port is activated on the Diva V-1PRI HS Media Board, two ports on the Diva V-2PRI HS Media Board, and four ports on the Diva V-4PRI PCIe HS and Diva V-4PRI PCIe FS Media Board. You can use only the activated ports, which are shown in the graphic below. The diagram is oriented with the edge connector pointing downwards. Typically, you must specify the port number during software configuration. Connect the cables as described above.



Note: Diva V-1PRI PCIe HS, V-2PRI PCIe HS, V-4PRI PCIe HS, and V-4PRI PCIe FS Media Boards do not supply the function of the CSU or DSU internally. You need to purchase it from an independent distributor.

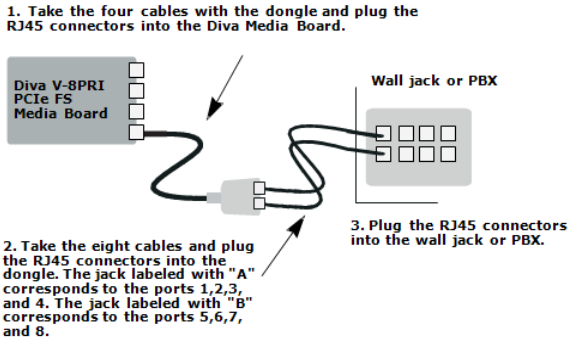
Diva V-8PRI PCIe FS Media Board

Diva V-8PRI PCIe FS Media Boards have four RJ45 ports for connecting four dongles. The dongles have two ports each for connecting two separate PRI lines; therefore, you can connect to up to eight PRI lines. You can use any port; typically, you must specify the port number during software configuration. The port numbers are shown below. The diagram is oriented with the edge connector pointing downwards.



Note: Diva V-8PRI PCIe FS Media Boards do not supply the function of the CSU or DSU internally. You need to purchase it from an independent distributor.

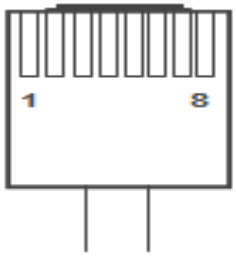
Connect the Diva V-8PRI PCIe FS Media Board as shown in this graphic:



Contact assignments (plugs and jacks):

RJ45	Signals	Dongle with RJ45		Signals
Pin 1	Receive+ (RX+) (Port A)	Port A	Pin 1	Receive+ (RX+)
Pin 2	Receive- (RX-) (Port A)		Pin 2	Receive - (RX-)
Pin 3	Receive+ (RX+) (Port B)		Pin 4	Transmit+ (TX+)
Pin 4	Transmit+ (TX+) (Port A)		Pin 5	Transmit- (TX-)
Pin 5	Transmit- (TX-) (Port A)	Port B	Pin 1	Receive+ (RX-)
Pin 6	Receive- (RX-) (Port B)		Pin 2	Receive- (RX-)
Pin 7	Transmit+ (TX+) (Port B		Pin 4	Transmit+ (TX+)
Pin 8	Transmit- (TX-) (Port B)		Pin 5	Transmit- (TX-)

Looking at the RJ45 connectors with the exposed connector pins facing you, the pins are numbered from 1 to 8 from left to right as shown below.



If the Dialogic® Diva® PRI Media Board in NT mode is connected to a PBX:

The Dialogic® Diva® System Release software enables you to configure Diva PRI Media Boards as network termination (NT). This means your Diva Media Board can serve as an NT for PBXs that act as terminal equipment and therefore requires an NT to provide a clocking signal. For example, the Diva Media Board can act as an NT when coupling PBXs with the Q.SIG protocol.

When connecting the Diva Media Board to a PBX that acts as TE, configure the Diva Media Board as an NT. Wire it to the PBX as shown in the “Wiring” diagram and apply the appropriate assignment to the PBX connectors.

If the ISDN PRI, E1, or T1 line uses open-ended wire connections:

In some cases, you are required to connect to your network termination using the open-ended connectors. The transmission (TX) leads and the receiving (RX) leads are identified by color; transmission leads are blue and white-blue, receiving leads are orange and white-orange.
Use an RJ45 to open ends cable:

Diva PRI Media Board	Signals	Open Ends
Pin 1	Receive + (RX+)	white-orange
Pin 2	Receive - (RX -)	orange
Pin 4	Transmit + (TX +)	white-blue
Pin 5	Transmit - (TX -)	blue
shielded plug	overall shielded	shield

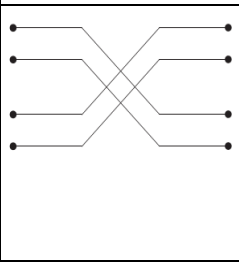
Make sure to connect the transmission leads of your Diva PRI Media Board to the receiving connectors of the network termination and the receiving leads of your Diva PRI Media Board to the transmission connectors of the network termination.

> **Note:** If the Diva Media Board is not properly connected to the ISDN PRI, E1, or T1 line, a layer 1 warning light appears on the NT, the Diva Media Board, the external CSU, and at the switching center of the network provider. The network provider might then deactivate the line. If this occurs, you must contact your network provider to reactivate your line.

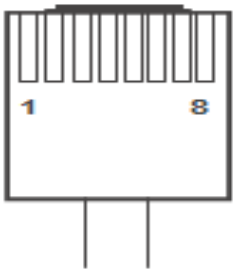
If the Dialogic® Diva® PRI Media Board is run in back-to-back mode:

The Dialogic® Diva® System Release software enables you to configure Diva PRI Media Boards as network termination (NT). This means you can use two Diva Media Boards in back-to-back operation.
When using Diva Media Boards back-to-back, configure one Diva Media Board as an NT and the other one as TE. Connect the Diva Media Boards with a crossover cable. You can build your own crossover cable using an open-ended ISDN cable. Just crimp the open end according to the NT-side assignment shown in this diagram:

Wiring

	TE Side		NT Side
Pins on RJ45	Signals	Wiring	Signals
1	RX+		RX +
2	RX -		RX -
3 not used			
4	TX +		TX +
5	TX -		TX -
6 not used			
7 not used			
8 not used			

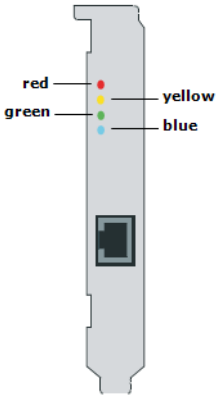
Note: Looking at the RJ45 connector with the exposed connector pins facing you, the pins are numbered from 1 to 8 from left to right (as shown below).



Checking the Status LEDs

Dialogic® Diva® V-PRI, Diva UM-PRI, and Diva PRI 3.0 Media Boards

The Dialogic Diva PRI Media Boards have two or four status LEDs that indicate a specific status of the board. Diva PRI Media Boards with one port have four LEDs:

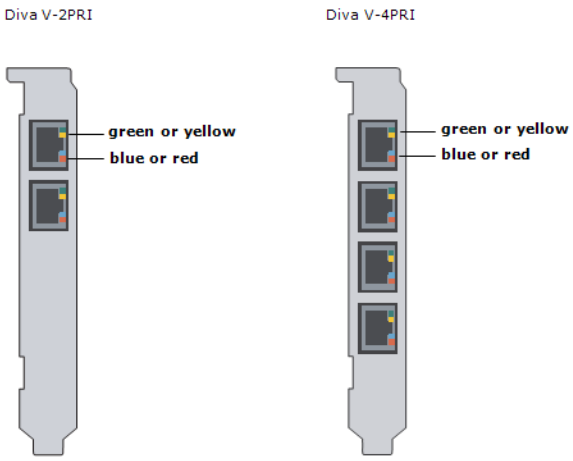


The table below describes the function of each LED:

Color	Status	Description
yellow	off	Normal operation.
	lit	Remote site is experiencing synchronization problems (if a remote alarm/yellow alarm is detected).
red	off	Normal operation.
	lit	The receiver does not detect a signal (loss of signal/red alarm).
blue	off	Normal operation.
	lit	Received frames are not synchronized properly (alarm indication signal/blue alarm).
green	off	Layer 2 is not active. Check your layer 2 configuration for example, switch type and switch, etc.
	lit	Layer 2 is active. if your Dialogic® Diva Media Board works properly, layer 2 is always active.

Dialogic® Diva® V-2PRI and V-4PRI Media Boards

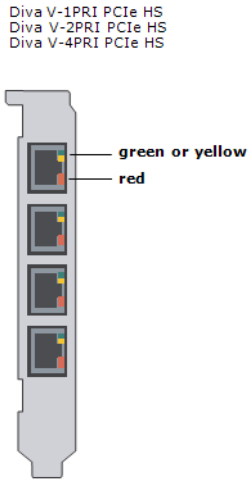
Diva V-xPRI PCI Media Boards have two multifunctional LEDs for each port:



The table below describes the function of each LED:

Color	Status	Description
green	off	Layer 2 is not active. Check your layer 2 configuration, for example switch type, switch, etc.
	lit	Layer 2 is active. if your Dialogic® Diva Media Board works properly, layer 2 is always active.
yellow	off	Normal operation.
	lit	Remote site is experiencing sychronization problems (if a remote alarm/yellow alarm is detected.
red	off	Normal operation.
	lit	The receiver does not detect a signal (loss of signal/red alarm).
blue	off	Normal operation.
	lit	Received frames are not synchronized properly (alarm indication signal/blue alarm).

Dialogic® Diva® V-1PRI PCIe HS, V-2PRI PCIe HS, V-4PRI PCIe HS Media Boards



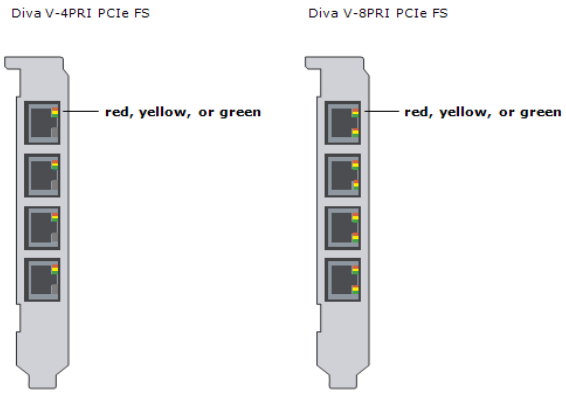
Note: On Diva V-1PRI PCIe HS and Diva V-2PRI PCIe HS Media Boards, not all ports are activated.

The table below describes the function of each LED:

Color	Status	Description
green	off	Layer 2 is not active. Check your layer 2 configuration, for example switch type, switch, etc.
	lit	Layer 2 is active. if your Dialogic® Diva Media Board works properly, layer 2 is always active.
yellow	off	Normal operation.
	lit	Remote site is experiencing sychronization problems (if a remote alarm/yellow alarm is detected.
red	off	Normal operation.
	lit	The receiver does not detect a signal (loss of signal/red alarm).

Dialogic® Diva® V-4PRI PCIe FS and Diva V-8 PRI PCIe FS

Diva V-xPRI PCIe HS Media Boards have multifunctional LEDs:



The table below describes the function of each LED:

Color	Status	Description
All colors	off	Software has not initialized
green	lit	Carrier Sense (normal error free operation)
yellow	lit	Yellow alarm
	slow flashing together	Blue alarm
red	lit	Red alarm

Warranty Period

For specific warranty information for this board, refer to the Warranty section of the Products page located at the following URL:

http://www.dialogic.com/warranties/

Contacting Technical Support

For Dialogic technical support issues, refer to the Dialogic Service Center at www.dialogic.com/support.

Returning a Product

To return a board for warranty repair or for any other returns, please refer to www.dialogic.com/support/hwfaults.

All contents of this document are furnished for informational use only and are subject to change without notice and do not represent a commitment on the part of Dialogic Inc. or its subsidiaries ("Dialogic"). Reasonable effort is made to ensure the accuracy of the information contained in the document. However, Dialogic does not warrant the accuracy of this information and cannot accept responsibility for errors, inaccuracies or omissions that may be contained in this document.
INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH DIALOGIC® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN A SIGNED AGREEMENT BETWEEN YOU AND DIALOGIC, DIALOGIC ASSUMES NO LIABILITY WHATSOEVER, AND DIALOGIC DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF DIALOGIC PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT OF A THIRD PARTY.

Dialogic products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

Due to differing national regulations and approval requirements, certain Dialogic products may be suitable for use only in specific countries, and thus may not function properly in other countries. You are responsible for ensuring that your use of such products occurs only in the countries where such use is suitable. For information on specific products, contact Dialogic Inc. at the address indicated below or on the web at www.dialogic.com.

It is possible that the use or implementation of any one of the concepts, applications, or ideas described in this document, in marketing collateral produced by or on web pages maintained by Dialogic may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic does not provide any intellectual property licenses with the sale of Dialogic products other than a license to use such product in accordance with intellectual property owned or validly licensed by Dialogic and no such licenses are provided except pursuant to a signed agreement with Dialogic. More detailed information about such intellectual property is available from Dialogic's legal department at 9800 Cavendish Blvd., Suite 500, Montreal, Quebec, Canada H4M 2V9. Dialogic encourages all users of its products to procure all necessary intellectual property licenses required to implement any concepts or applications and does not condone or encourage any intellectual property infringement and disclaims any responsibility related thereto. These intellectual property licenses may differ from country to country and it is the responsibility of those who develop the concepts or applications to be aware of and comply with different national license requirements.

Dialogic, Dialogic Pro, Dialogic Blue, Veraz, Brooktrout, Diva, Diva ISDN, Making Innovation Thrive, Video is the New Voice, VisionVideo, Diastar, Cantata, TruFax, SwitchKit, SnowShore, Eicon, Eiconcard, NMS Communications, NMS (stylized), SIPcontrol, Exnet, EXS, Vision, PowerMedia, PacketMedia, BorderNet, inCloud9, I-Gate, ControlSwitch, NaturalAccess, NaturalCallControl, NaturalConference, NaturalFax and Shiva, among others as well as related logos, are either registered trademarks or trademarks of Dialogic Inc. and its affiliates or subsidiaries. Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at 9800 Cavendish Blvd., Suite 500, Montreal, Quebec, Canada H4M 2V9. Any authorized use of Dialogic's trademarks will be subject to full respect of the trademark guidelines published by Dialogic from time to time and any use of Dialogic's trademarks requires proper acknowledgement.

The names of actual companies and products mentioned herein are the trademarks of their respective owners.
.