ISDN TA PC Card
ISDN MODEM PC Card
User's Manual

Version: 4.0
Latest Update: January, 1999

QTK99-F010
FCC ID MQ4TA123

REGULATORY STATEMENTS

FCC Certification

The United States Federal Communications Commission (FCC) and the Canadian Department of Communications have established certain rules governing the use of modems and other electronic equipment.

FCC Part 15 Registration

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.
(2) This device must accept any interface received, including interface that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Chapter 1 Introduction

1.1 ISDN MODEM PC Card

The ISDN TA + 56K Fax/Modem + ISDN Phone Multifunction PC Card (so called ISDN MODEM PC Card) is the only one multifunction PC Card in the world, which offers seamless connection between digital ISDN line and analog telephone line (PSTN) within one single PC Card. Its unique "switchable" feature allows you enjoy both speed and convenience of traveling needs no matter where you are in the world.

It's peerless switchable technology integrates both ISDN TA and today's fastest 56K fax/modem technologies together. The users can switch to digital ISDN connections or analog PSTN connections just simply plug-in the provided network connection cables without any pain. Moreover, you don't need to be hustle of buying two PC Cards, but still enjoy two functions. It definitely protects your investment and meets your future needs.

In addition to its unique switchable ability, it also features "ISDN Phone" voice application. Normally, most of the ISDN TA PC Card in the market today functions 1 or 2 B-channel for data transferring only; however, with the multifunction PC Card, you can still take pleasure from the high speed digital data transferring, but also enjoy the fun and excitement of voice communications as well.

Key Features

- ISDN line or analog telephone line (PSTN) connection switchable.
- Provide 56K modem or G3 fax connections over analog telephone line or ISDN line.
- Feature built-in microphone/speakerphone interface for "ISDN Phone" voice applications.
- Provide options for ISDN S/T- or U-interface.
- Assure universal ISDN protocol compatibility.
  D-channel: DSS1 (Euro-ISDN), NI-1, INS Net 64
  B-channel: X.75, V.120, V.110, PPP/MP, Async-to-Sync PPP Conversion,
- Comply with most of the ISDN software standards, such as ISDN AT

command, NDIS WAN, WinISDN, CAPI 2.0, and NAF ISDN PCI

✣ Microsoft Plug and Play compatible.

✣ Menu-driven configuration utility included.

SPECIFICATIONS

Fax

- G3, send and receive
- EIA Class 1 fax command set

Modem

- V.90/K56flex (56Kbps), V.34+ (33.6Kbps), V.34 (28.8Kbps), V.32bis (14.4Kbps)
- V.42/V.42bis, MNP Class 2 to 5 error correction and data compression

ISDN Standards

- Basic Rate Access (2B+D)
- U-interface: complies with ANSI T1.601
- S/T-interface: complies with ITU-T I.430
- Protocol: ITU-T Q.921, Q.931, and ETSI NET3

Line Rate

- 64/56 Kbps on 1 B-channel (ISDN data mode)
- 128/112 Kbps on 2 B-channel (PPP/MP)
- 56Kbps on 1 B-channel (modem mode)
- 16Kbps on D-channel for signaling

ISDN Network & Switch Compatibility

- National ISDN-1 (NI-1)
- AT&T 5ESS Custom
- Northen Telecom DMS-100 Custom
- DSS1 (Euro-ISDN)
- INS-Net 64

B-channel Protocols

- X.75

- V.120
- V.110
- PPP and Multilink Protocol
- Async-to-Sync PPP Conversion
- 56K modem over B-channel
- G3 fax over B-channel
- Voice over B-channel

Application Program Interfaces

- ISDN AT Command Set
- WinISDN
- CAPI 2.0
- NDIS WAN
- NAF ISDN PCI

Operating System Support

- Windows 98
- Windows 95 and OSR2
- Windows NT 4.0

1.2 ISDN TA PC Card

Key Features

- PCMCIA 2.1 and JEIDA 4.1 compliant
- Feature ISDN U-interface or S/T-interface for different network access connection requirement
- All major ISDN signaling protocols and switches support which assures ISDN interoperability
- Support of various Application Program Interfaces (APIs) comply with most popular software standards
- Windows-based configuration utility included to ease ISDN TA setup
- Microsoft Plug and Play compatible
- PC Card hot-swap and insertion support (for Win 98, 95)

SPECIFICATIONS

ISDN Standards

- Basic Rate Access (2B+D)

- U-interface: complies with ANSI T1.601
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- 64/56 Kbps on 1 B-channel (ISDN data mode)
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ISDN Network & Switch Compatibility
- National ISDN-1 (NI-1)
- AT&T 5ESS Custom
- Northen Telecom DMS-100 Custom
- DSS1 (Euro-ISDN)
- INS-Net 64

B-channel Protocols
- X.75 (CAPI mode)
- V.120
- V.110
- PPP and Multilink Protocol
- Async-to-Sync PPP Conversion
- Modem over B-channel (CAPI mode)
- G3 fax over B-channel (CAPI mode)
- Voice over B-channel (CAPI mode)

Application Program Interfaces
- ISDN AT Command Set
- WinISDN
- CAPI 2.0
- NDIS WAN
- NAF ISDN PCI

Operating System Support
- Windows 98
- Windows 95 and OSR2

- Windows NT 4.0

1.3 The Package

- One PCMCIA Type II ISDN TA PC Card or ISDN MODEM PC Card.
- One ISDN U- or S/T-interface ISDN network connection cable.
- One analog fax/modem DAA connection cable (for ISDN MODEM model only)
- One ISDN Phone kit (for ISDN MODEM model only)
- One ISDN phone cord with RJ45 plugs.
- One telephone cord with RJ11 plugs (for ISDN MODEM model only)
- One user's manual
- One quick installation guide
- Driver diskettes for Win 98/95, and Win NT 4.x.
- One Fax/modem software (for ISDN MODEM model only)
- One CAPI-based ISDN software (optional)

Chapter 2 Communication Basic

2.1 System Requirement

To run the ISDN TA PC Card and ISDN MODEM PC Card, following system configurations are required:

* CPU: Intel Pentium or above
* HDD: at least 30MB free space
* Memory: at least 16MB RAM
* At least one Type II or Type III PCMCIA slot
* PCMCIA Card Services and Socket Services v2.1 or newer
* Windows 98, Windows 95 (or OSR2), or Windows NT 4.x well installed

2.2 Overview of ISDN TA PC Card

The ISDN TA PC Card features:

- ISDN data connections over ISDN B-channel, through either VCOMM, WinISDN*, NDIS, CAPI 2.0, or NAF ISDN PCI, using ISDN U- or S/T-interface network connection cable.

- Modem and G3 fax connections over ISDN B-channel, through VCOMM and/or CAPI, using ISDN U- or S/T-interface connection cable.
- ISDN Phone voice applications over ISDN B-channel, through CAPI, using ISDN U- or S/T-interface connection cable.

Choose the appropriate hardware and software combinations for your applications.

Applications	Network Connection Cable	ISDN API
ISDN Data (PPP/MLP, V.110, V.120, X.75, etc.)	ISDN U- or S/T-interface network connection cable	VCOMM, NDIS, WinISDN*, CAPI, NAF ISDN PCI
Modem over ISDN	ISDN U- or S/T-interface network connection cable	CAPI
G3 fax over ISDN	ISDN U- or S/T-interface network connection cable	CAPI
ISDN Phone over ISDN	ISDN U- or S/T-interface network connection cable	CAPI (with sound card)

* WinISDN support is available under request.

2.3 Overview of ISDN MODEM PC Card

The ISDN MODEM PC Card features:

- ISDN data connections over ISDN B-channel, through either VCOMM, WinISDN*, NDIS, CAPI 2.0, or NAF ISDN PCI, using ISDN U- or S/T-interface network connection cable.
- 56K modem and G3 fax connections over ISDN B-channel, through VCOMM and/or CAPI, using ISDN U- or S/T-interface connection cable.
- ISDN Phone voice applications over ISDN B-channel, through VCOMM and CAPI, using ISDN U- or S/T-interface connection cable.
- 56K modem and G3 fax over analog telephone line (PSTN), using analog fax/modem DAA connection cable (working exactly same as conventional analog 56K fax/modem)

Choose the appropriate hardware and software combinations for your applications.

Applications	Network Connection Cable	ISDN API
ISDN Data (PPP/MLP, V.110, V.120, X.75, etc.)	ISDN U- or S/T-interface network connection cable	VCOMM, NDIS, WinISDN*, CAPI, NAF ISDN PCI
Modem over ISDN	ISDN U- or S/T-interface network connection cable	VCOMM, CAPI
G3 fax over ISDN	ISDN U- or S/T-interface network connection cable	CAPI
ISDN Phone over ISDN	ISDN U- or S/T-interface network connection cable	with hardware ISDN Phone kit, or CAPI (with sound card)
Analog Fax/Modem over PSTN	Analog Fax/Modem DAA network connection cable	VCOMM, CAPI

* WinISDN support is available under request.

2.4 Installation

1. Install the PC Card driver suite and ISDN Configuration Utility.
2. Insert the ISDN MODEM PC Card or ISDN TA PC Card to the free PCMCIA slot.
3. Connect the ISDN network connection cable (U- or S/T-interface) and/or analog fax/modem DAA to the multifunction PC Card's 15-pin connector.
4. Link the ISDN phone line (RJ-45 phone cord) to the ISDN network connection cable and ISDN outlet on the wall for ISDN connections. Or, for ISDN MODEM, link the analog telephone line (RJ-11 phone cord) to the analog fax/modem DAA and telephone outlet on the wall for analog 56K fax/modem connections.

Note: If S/T-interface ISDN network connection cable is used, the ISDN phone cord should be connected between the ISDN network connection cable and external NT1 device.

5. Your ISDN TA/ISDN MODEM PC Card installation is completed.

Appendix A: Selecting Hardware Settings

When installing a card in an IBM PC compatible computer, it is important to choose settings for the PC Card which do not conflict with any other cards in the computer. Following lists are some of the settings that other cards in your computer may already be using. Your goal will be to choose an Interrupt (IRQ) and a COMx: port for your modem, that does not interfere with any other devices in your computer. When you have selected the Port and Interrupt you want to use, remember to update your communications software to the same settings.

COM ports

COM Port	I/O Resource 1	I/O Resource 2
COM1 to COM8	16 byte, 0100 to 03FF	1 byte, 0100 to 03FF

Interrupts

IRQ	What cards/ports may be using it
0	The computer's timer (not a possible choice)
1	The Keyboard (not a possible choice)
2	If you have a PC XT: 8-bit network card, VGA card, handy scanner, bus mouse, MIDI card or a sound card. If you have a PC AT computer controller
3	Computer's COM2:, COM4:, COM6:, COM8:, network card, SCSI hard drive controller, handy scanner, bus mouse, or sound card.
4	Computer's COM1:, COM3:, COM5:, COM7:, network card, handy scanner, bus mouse, or sound card.
5	Computer's LPT2:, network card, MFM hard drive controller, MIDI card, VGA, SCSI hard drive controller, handy scanner, bus mouse, or sound card.
6	Floppy disk drive controller, network card, or sound card. (not a possible choice)
7	Computer's LPT1:, network card, handy scanner, MIDI card, or sound card.
8	Computer's clock. (only on a PC AT, not a possible choice)

9	VGA or network card. (similar to IRQ2)
10	Network card.
11	Network card.(not a possible choice)
12	Network card or bus mouse. (not a possible choice)
13	Computer's co-processor. (not a possible choice)
14	Hard drive controller or network card. (not a possible choice)
15	Second hard drive controller or network card. (not a possible choice)

Appendix B: Phone Jack Pin Assignment

The ISDN Modem multifunction PC Card comes with either U-interface or S/T-interface network connection cable, and analog fax/modem DAA. The U-interface connection cable is for direct ISDN line connection, which does not need any extra ISDN NT1 device. The S/T-interface connection cable is for connecting to NT1. Both U- and S/T-interface use RJ45 phone jack, but with different pin assignments. The bundled RJ45 phone cord can be used for both U- or S/T-interface connections. The fax/modem DAA uses RJ-11 phone jack to connect to PSTN (analog telephone line) directly.

The RJ45 pin-outs of U-interface

Pin 1	Not Connected
Pin 2	Not Connected
Pin 3	Not Connected
Pin 4	Signal
Pin 5	Signal
Pin 6	Not Connected
Pin 7	Not Connected
Pin 8	Not Connected

The RJ45 pin-outs of S/T-interface

Pin 1	Not Connected
Pin 2	Not Connected
Pin 3	Transmit Signal (T1)
Pin 4	Receive Signal (R1)
Pin 5	Receive Signal (R2)
Pin 6	Transmit Signal (T2)
Pin 7	Not Connected
Pin 8	Not Connected

The RJ11 pin-outs of analog fax/modem DAA

Pin 1	Not Connected
Pin 2	Not Connected
Pin 3	Tip
Pin 4	Ring
Pin 5	Not Connected
Pin 6	Not Connected

Appendix C: Utilities

Both the ISDN TA and ISDN MODEM PC Card provide some useful utilities, which let you to check and monitor the PC Card running statuses, setup the PC Card configuration, or for special application purpose like ISDN Phone.

"Status" Utility

"**Status**" utility shows the ISDN line statuses (D-Channel, B1-Channel, and B2-Channel). When the ISDN line is activated, the D-Channel indicator will be lighted-up. When B1-Channel and/or B2-Channel is/are engaged (in use), the light(s) will be turned on accordingly.

"**Close**" button: to close the "Status" utility
"**OK**" button: to hide the "Status" window to system tray. To enlarge the display window, double click the icon in system tray
"**More**" button: to display more information about the ISDN D-channel and B-channel usage.

For Win 98/95, execute "**Status**" (double click the icon) in "Configuration utility". Or run "**Configure**" → open "**Tool**" tab → click "**Status**" button.

For Win NT 4.x, click "**Start**" button on the left-lower corner on Windows desktop, execute "**Run**", enter "**status.exe**" file name.

Protocol Analyzer Utility

The ISDN protocol analyzer is an useful utility for technician to do trouble shooting. You can capture the ISDN protocols on the D-Channel and B-Channel for trouble shooting when you are encountering ISDN connection problems. Then contact the technician or technical support person for further assistance.
"**Filters**" pop-up menu: to capture the D-channel, and B-channel protocol

data when ISDN line is activated

"**Display**" pop-up menu: to display and interpret the captured ISDN protocol data

"**File**" pop-up menu: to save the captured data. You can save and send the data to your technician or technical support people for further analysis.

For Win 98/95, execute "**Protocol**" (double click the icon) in "Configuration utility". Or run "**Configure**" → open "**Tool**" tab → click "**Protocol**" button.

For Win NT 4.x, click "**Start**" button on the left-lower corner on Windows desktop, execute "**Run**", enter "**pant.exe**" file name.

Appendix D: AT Command

Refer to the "**ISDNCMD.TXT**" file in the "**Disk 4**" driver disk for the ISDN AT command details.

Refer to the "**MDMCMD.TXT**" file in the "**Disk 4**" driver disk for the Fax/Modem AT command details.

Appendix E: More Information

You can find more information about the PC Card, such as Q&A, in the "**Disk 4**" driver disk. Execute the EXE file(s) to de-compresse the files.