

PANASONIC WIRELESS MODEM

CF-27***M-ADS**

CF-27***M-RAM**

CF-27***M-CDP**

for Panasonic CF-27 Series Personal Computers

OPERATING INSTRUCTIONS

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Introduction

Thank you for purchasing the Panasonic Wireless Modem for the CF-27 Series Personal Computer. This product functions as an internal wireless modem solution when mounted into the CF-27 series personal computer.

You are about to experience the freedom of mobility and the power of staying in touch. With Panasonic's CF-27 Wireless Modem solution, you can enjoy instant connectivity to your office, the Internet and e-mail - no matter where you need to work.

This Operating Instructions Manual explains how to get started with your modem and provides troubleshooting tips.

Store this manual in a safe place after reading it.

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INET is a registered trademark of INET Technologies, Inc.

For U.S.A.

Federal Communications Commission Radio Frequency Interference Statement

FCC Class B Part 15

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

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

Warning

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

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 manufacturer's instructions, may cause harmful interference to radio communications.

There is no guarantee, however, that interference will not occur on a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment 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 separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

User Precautions

As with any portable computer device, precautions should be taken to avoid any damage. The following usage and handling procedures are recommended:

Usage

Avoid extreme heat and cold

Do not store or use the wireless modem in locations exposed to heat, direct sunlight or extreme cold. Avoid moving the wireless modem between locations with large temperature differences.

Operating:	5° C to 35° C (41° F to 95° F)
Storage:	-20° C to 60° C (-4° F to 140° F)

Avoid humidity, liquids and dust.

Do not store or use the wireless modem in locations exposed to high humidity, liquids (including rain) or dust.

Prevent shock

Avoid subjecting the wireless modem to severe vibrations or impact. Do not place the wireless modem inside a car trunk.

Avoid radio frequency interference

Do not place the wireless modem near a television or radio receiver.

Handling

Avoid magnetic fields

Keep the computer and wireless modem pack away from magnets.

Avoid bending or pulling on the wireless antenna (in LCD assembly)

Damage to the wireless antenna may affect wireless communication or cause the wireless modem to malfunction.

Avoid touching the wireless modem external antenna connector

Do not touch the wireless modem external antenna connector, foreign substances (dirt, oil, creams etc.) may cause the wireless modem pack to malfunction.

Do not disassemble the modem pack

Do not attempt to disassemble your wireless modem pack, doing so may void the manufacturer's warranty.

Change or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Description

Front Panel Description



Power On Switch

The modem powers up independently from the laptop and will remain on when the laptop is powered off.



Power On Indication - Green:

A green LED will be used to signal when the modem has been powered on.



Message Waiting - Amber:

The Message Waiting LED will flash when the modem has a received message packet waiting to be unloaded.



In Coverage - Green:

The In Coverage LED will flash whenever the modem has logged on to a base station.



Wireless Modem Panel



Description (cont.)

H.O.T. Antenna



The laptop is equipped with a H.O.T. Antenna (High-gain, Omni-directional, Telescopic). The antenna is retractable*, into the LCD assembly, and may swivel 360° for ease of use and increasing signal reception strength. Position the antenna to radiate away from the body to increase effective coverage.

External Antenna Connector



The laptop is equipped with an external antenna connector. An external antenna (i.e. mounted on a vehicle) may be connected to provide higher signal strength in fringe or low signal areas to maximize effective coverage.



* CAUTION

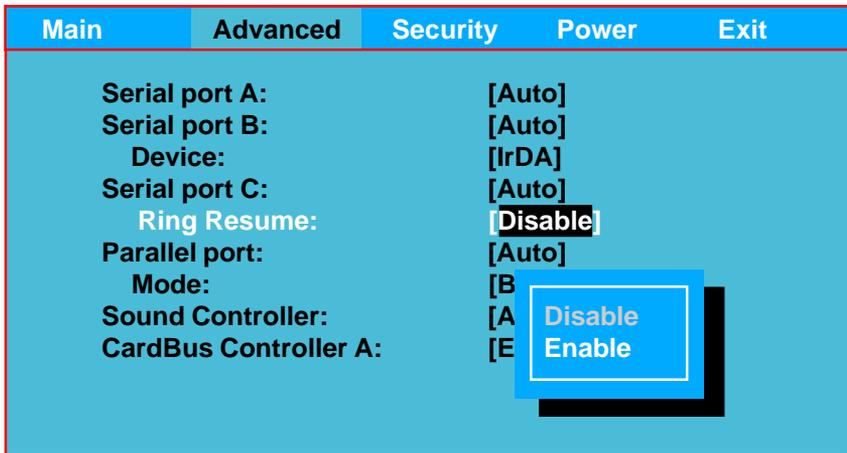
Do not apply excessive force to the H.O.T. antenna or external antenna connector. Doing so could weaken the signal reception strength or damage the antenna or laptop.

Description (cont.)

Features

Ring Resume*

The modem can “wake up” the laptop when a message is being received (the modem is powered on and the laptop is in “Suspend” mode). The following change to the BIOS setting is necessary to begin utilizing the Ring Resume feature. Re-boot the laptop, when the Panasonic screen appears, press “F2” to enter the PhoenixBIOS Setup Utility.



Select “Advanced” then “Ring Resume”, press [Enter] to display the Ring Resume options and select “Enable”, “Disable” is the default setting. Then press [Esc] then [Enter] to “Save values & Exit”. The laptop will restart. Use the legend at the bottom of the menu for key stroke instructions.

The “Suspend” mode would need to be enabled in either the “Power” settings in the PhoenixBIOS Setup Utility or Windows 95 Power Management, for detailed instructions see the CF-27 or Windows 95 Operating Instructions Manual.

* NOTE

The “Ring Resume” option will only appear when the “-ADS or -RAM” wireless modem for is installed. It will not appear when the “-CDP” modem is installed.

Description (cont.)

Features (cont.)

Plug-n-Play and Non Plug-n-Play settings

If necessary the wireless modem I/O address can be changed between Plug-n-Play and Non Plug-n-Play settings in the PhoenixBIOS Setup Utility. Reboot the laptop and press “F2” when the Panasonic screen appears.

Main	Advanced	Security	Power	Exit
	Serial port A:		[Auto]	
	Serial port B:		[Auto]	
	Device:		[IrDA]	
	Serial port C:		[Enable]	
	Base I/O:		[2F8/IRQ3]	
	Ring Resume:		[Disable]	
	Parallel port:		[Aut	
	Mode:		[Bi-c	
	Sound Controller:		[Aut	
	CardBus Controller A:		[Ena	

3F8/IRQ4
2F8/IRQ3
2E8/IRQ10

Select “Advanced” then “Serial port C:”, press [Enter] to display the Serial port C options and select “Enable”. The “Base I/O” setting now appears in the menu options, highlight the address setting and select an I/O address, “2F8/IRQ3” is the default setting. Then press [Esc] then [Enter] to “Save values & Exit”. The laptop will restart. Use the legend at the bottom of the menu for key stroke instructions.

NOTE

The Base I/O settings will establish the following settings in the operating system (i.e. Windows 95)

3F8/IRQ4	=	COM1
2F8/IRQ3	=	COM2
2E8/IRQ10	=	COM3

Network Information

DataTAC Network Technology for the ARDIS Network

The DataTAC infrastructure has become an international data communications standard, offering fast data transmission rates with accurate, highly reliable message delivery. DataTAC networks are deployed around the world from North America to Europe to Asia-Pacific.

Using an advanced Radio Data Link Access Procedure (RD-LAP) radio channel protocol, DataTAC systems provide transmission rates up to 19.2 Kb per second and 9.6 Kb per second depending on the country. Those rates mean fewer delays and faster response times for the mobile user. For network operators, they mean greater capacity to accommodate more customers, while minimizing the required investment in network infrastructure.

DataTAC's error detection and correction schemes provide increased message accuracy, fewer message retries and enhanced network throughput. With DataTAC technology, the state of the entire network is constantly monitored and safety mechanisms including system alarms, remote diagnostics and redundant backup links ensure network reliability and availability.

The key components of the network infrastructure include the Network Management Center (NMC), Area Communications Controller (ACC) and base site equipment. The NMC is an advanced client-server based management tool which provides all network administration, operation and maintenance functions. It acts as the central point of control in the DataTAC system.

The ACC consists of the Radio Network Gateway (RNG), Radio Network Controller (RNC), and Communications Hub. The ACC is primarily responsible for all message switching and routing functions, as well as providing the key communication link between host computers and remote base stations. Connectivity between the host computer and the infrastructure is established using industry standard X.25 or TCP/IP host link protocols. The ACC maintains all customer-specific information for each device on the system and allows users within a given geographical area to connect to host application services. It manages user device system usage/traffic information for accounting/billing purposes and detailed analysis of usage patterns. DataTAC Data System Station (DSS) base site equipment is located at various remote sites in the operational area of coverage and provides the RF link between the DataTAC infrastructure and end user devices. They convert the host data messages into the RD-LAP radio channel protocol for transmission to the user devices and reverse the process on the return connection. They also allow device roaming between base site coverage areas in a seamless manner completely transparent to the end user.

Network Information (cont.)

Mobitex Network Technology for the RAM Network

The Mobitex wireless network technology, developed by Eritel in 1984 for Swedish Telecom, has become an international data communication standard. Now managed by the Mobitex Operators Association (MOA), which controls the specifications for this open standard, Mobitex is a secure, reliable, wireless packet switching network specifically designed for wide-area wireless data communications.

Mobitex networks are deployed on every continent in the world (except Antarctica). Mobitex is presently available* in Australia, Belgium, Canada, Chile, Finland, France, Germany, Korea, the Netherlands, Nigeria, Norway, Poland, Singapore, Sweden, the United Kingdom, and the United States.

Mobitex provides highly reliable, two-way digital data transmission. The network provides error detection and correction to ensure the integrity of the data being sent and received, and includes transmission acknowledgment.

The Mobitex network has a hierarchical (or pyramid) network structure. Messages are routed from sender to receiver along the most direct path possible. Each Mobitex radio modem is assigned a unique Mobitex Access Number (MAN), and the network remains constantly aware of the mobile's location while it is within network coverage. Each radio cell is served by an intelligent base station. Because intelligence is distributed throughout the network, data is only forwarded to the lowest network node common to the sender and the receiver. The base station is thus able to handle all local traffic in the cell.

The network constantly monitors the location of the mobile users. As a mobile moves from one area of coverage to another, base stations track its signals, sending updated mobile location and status information to the network. If the network goes down at any point in transmission, the message is held until network service is restored. If the mobile receiver moves outside the coverage area, the base station holds on to data until coverage is reestablished, thus preventing loss of data and increasing reliability of transmission.

Mobitex uses a packet switching technique to provide the greatest flexibility in data transmission. Mobitex packets include information about the origin, destination, size, type, and sequence of data to be sent, enabling packets to be transmitted individually, in any order, as traffic permits. Individual packets may travel along different routes, in any order, without interfering with other packets sent over the same frequency by different users. At the receiving end, all packets are accounted for, and reassembled into the original message. Setup time is eliminated and network connection is instantaneous. As a result, packet-switching makes far more efficient use of channel capacity, typically allowing 10 to 50 times more users over a radio channel than a circuit switched network.

* as of April, 1997

Network Information (cont.)

Cellular Digital Packet Data (CDPD) Network Technology

The Cellular Digital Packet Data (CDPD) network is a two-way wireless data communication system. This system uses cellular telephone channels to transfer data seamlessly from a mobile end system to a fixed end system. CDPD operates within the already existing cellular telephone infrastructure utilizing the idle time that exists on cellular voice channels to send small packets of data, called datagrams, to a designated receiver. Researchers estimate that over 30% of a cellular channel's airtime is idle, even during heavy traffic.

The CDPD system sends signals down the various cellular channels to locate an open channel. This process is called "sniffing". Once the CDPD system has located an open channel, the modem begins to send datagrams over that channel to the designated end user. In order that this process does not interfere with the cellular phone transmissions, the CDPD system has regulated channel "hops" to ensure that CDPD usage will not block a cellular voice channel for an extended period of time. Also, if a voice channel is activated, the CDPD system detects this voice message and automatically "hops" to the next available idle channel. This process is quite complex. However, the user need not be aware of this process. The CDPD system manages the routing of the individual data packets to the proper destination. On a basic level, the CDPD network operates like any other computer network with the exception that the CDPD mobile end system is free to roam wirelessly and conduct network operation from other locations using the network of cellular carriers. The CDPD network is made up of a series of cellular networks which are operated by various cellular carriers. These cellular carriers provide the user with network management as well as application services. To increase user security, carriers use forward error correction, authentication, and encryption. The cellular carrier is responsible for all accounting services for the CDPD service. The user selects the CDPD carrier service with which to operate by registering with an individual carrier. Generally, an area will have two cellular carriers that provide CDPD service. The user may sign up with either of the two carriers.

CDPD technology provides many benefits to the user including the following: CDPD is cost-effective. By compressing data before sending it over the cellular channels, CDPD cuts down the amount of data to be transmitted, and thus, reduces the cost of cellular usage. Another cost-reducing advantage of CDPD is that the user is only charged for the data transmitted, not for the airtime used. And by using the existing cellular infrastructure currently in place for the voice network, CDPD has few start-up expenditures which further reduces cost to the user. CDPD is fast. At 19,200 bps, it is one of the fastest wide-area data networks. CDPD is mobile. It allows free travel between cell sites. The CDPD system automatically tracks the user's position and allows the user to maintain communication between cell sites. CDPD is reliable. It utilizes error correction applications for dependable data delivery.

Troubleshooting

Read this section if your computer is not operating properly. Note that some problems may be caused by the software in your system. If you are ultimately unable to correct a problem, contact your technical support center.

The wireless modem does not power on:

Is the wireless modem powered on?

Is the laptop battery fully charged or is the ac adapter connected?

The computer does not recognize the wireless modem:

Has the wireless modem been powered on?

Have you changed the operating environment settings?

Run the PhoenixBIOS Setup Utility to verify the [Serial port C] menu options appear in the “Advanced” menu (goto Description section for instructions).

You cannot send or receive anything (no wireless network contact):

If you are indoors, try moving closer to a window.

Make sure the antenna is in the upright position (extended from the LCD).

Check your battery level, if low (red BAT indicator) connect the AC adapter.

I have powered the modem and laptop on, but there is no network contact:

You may not have sufficient coverage in your immediate physical area.

Try moving near a window or outside the building.

Make sure the antenna is in the upright position (extended from the LCD).

Has your subscription been turned on?

Have you changed the operating environment settings?

The modem indicates a low signal, but when I try to send something, the signal level drops to zero:

There may be some interference that is allowing the wireless modem pack to hear the network, but is preventing the network from hearing the wireless modem pack. Try changing your location, or moving closer to a window.

Specifications

For ARDIS Network / CF-27xxxxxxM-ADS

Item	Description	
Communication interface	Network	DataTAC 4000 and 5000 networks, including ARDIS
	Serial link protocol	NCL (Native Control Language) or RAP (Radio Access Protocol)
	RF link protocol	RD-LAP 19,200 bps and MDC 4800 bps
Radio performance	TX Frequency	806 to 825 MHz
	RX Frequency	851 to 870 MHz
	Transmit power	1.5W (to antenna) typical
Antenna	H.O.T. Antenna	Retractable
Physical specifications	W x D x H	2.61" x 3.44" x 0.38"
Environment	Weight	Approx. 2.3 oz.
	Operating temp.	5 ⁰ to 35 ⁰ C (41 ⁰ to 95 ⁰ F)
	Humidity range	30 to 80 % RH
Power Design	Voltage	6.0V ~ 9.5V (7.0V ~ 9.0V recommended)
	Current	1.3A max. (24ma Average at 7.2V)
	Transmit mode	900mA (typical 1.5W to antenna)
	Output voltage	High 4.5V min ~ Low 0.4V max (at .01mA)
	Input voltage	High 3.5V min ~ Low 1.5V max (at .01mA)
Regulatory compliance	FCC Part 15, 90 DOC Rss 122	

Specifications (cont.)

For Mobitex Network / CF-27xxxxxxM-RAM

Item	Description	
Communication interface	Network	RAM Mobile Data, and other 900 MHz Mobitex networks
	Serial link protocol	MASC (Mobitex Asynchronous Serial Communications) or RAP (Radio Access Protocol)
	RF link protocol	Mobitex 8000 bps
Radio performance	TX Frequency	896 to 902 MHz
	RX Frequency	935 to 941 MHz
	Transmit power	2.0W (to antenna) typical
Antenna	H.O.T. Antenna	Retractable
Physical specifications	W x D x H	2.61" x 3.44" x 0.38"
	Weight	Approx. 2.1 oz.
Environment	Operating temp.	5 ⁰ to 35 ⁰ C (41 ⁰ to 95 ⁰ F)
	Humidity range	30 to 80 % RH
Power source	Voltage	6.0V ~ 9.5V (7.0V ~ 9.0V recommended)
	Current	1.5A max. (25ma Average at 7.2V)
	Transmit mode	300~900mA(typical .60~2.0W to antenna)
	Output voltage	High 4.5V min ~ Low 0.4V max (at .01mA)
	Input voltage	High 3.5V min ~ Low 1.5V max (at .01mA)
Regulatory compliance	FCC Part 15, 90 DOC Rss 122	

Specifications (cont.)

For CDPD Network / CF-27xxxxxxM-CDP

Item	Description	
Communication interface	Airlink protocol Host protocol AT commands	CDPD 1.0 / CDPD 1.1 approved, PCMCIA Release 2.1, 16550 emulation SLIP (Serial Line Interface Protocol) PCCA STD 101, ANNEX L (CDPD AT Command Set)
Radio performance	Rate TX Frequency RX Frequency Transmit power Mode	19.2 Kbps (0.5 GMSK Modulation) 824.01 ~ 849.97 MHz 869.01 ~ 894.97 MHz 600 mW typical Full duplex
Antenna	H.O.T. Antenna	Retractable
Physical specifications	W x D x H Weight	85.6 mm x 54 mm x 10.5 mm Approx. 4.0 oz.
Environment	Operating temp. Humidity range	5 ^o to 35 ^o C (41 ^o to 95 ^o F) 30 ~ 80 % RH
Power Design	DC voltage Full duplex Listen mode Sleep mode	5.0V +/- 0.25 V 800 mA max., 650 mA typical 200 mA typical 80 mA max., 70 mA typical
Regulatory compliance	FCC Class Part 15 and 22	

Warranty

Panasonic Personal Computer Company (PPCC) Limited Warranty

Panasonic Personal Computer Company (referred to as “Panasonic”) will repair this product with new or rebuilt parts, free of charge in the U.S.A. for three (3) years from the date of original purchase in the event of a defect in materials or workmanship.

This warranty is extended solely to the original purchaser. A purchase receipt or other proof of date of original purchase will be required before warranty performance is rendered.

This warranty only covers failures due to defects in materials or workmanship which occur during normal use. It does not cover damage which occurs in shipment or failures which are caused by products not supplied by Panasonic or failures which result from alteration, accident, misuse, introduction of liquid or other foreign matter into the unit, abuse, neglect, installation, maladjustment of consumer controls, improper maintenance, modification or service by anyone other than a Factory Service Center or authorized Panasonic Service Dealer, or damage that is attributable to acts of God.

Limits and Exclusions:

There are no other express warranties except as listed above.

PANASONIC SHALL NOT BE LIABLE FOR LOSS OF DATA OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you.

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Notes

The serial number of the laptop and modem may be found on the labels located at the bottom of the laptop. Write these numbers below and keep this book along with your proof of purchase receipt to serve as a permanent record of your purchase for future reference.

MODEL NO. CF-27

LAPTOP SERIAL NO.

MODEM SERIAL NO.

LLI # (ARDIS only)

MAN # (RAM only)

IP ADDRESS (CDPD only)

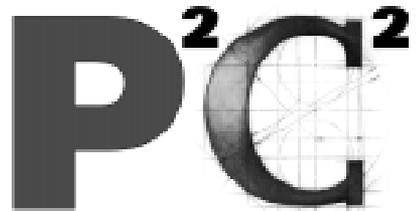
SPNI # (CDPD only)

SIDE (A OR B - CDPD only)

CARRIER (CDPD only)

NAME OF DEALER

DATE OF PURCHASE



**Panasonic Personal
Computer Company**