TELXON

Connection Manager

User's Guide

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Part Number: 23547-701-01
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Contents

Regulations 1

FCC statement

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

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

DOC statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as outlined in the Radio Interference Regulations of the Canadian Department of Communications (DOC).

This Class A digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numerique de la Classe A respecte toutes les exigences du Reglement sur le material broilleur du Canada.

CE statement

This device has the European community's CE mark of approval.

MiniNet 2.4 radio regulations

FCC statement

The radio module within the Telxon Connection Manager fully complies with FCC Part 15.247 limits for intentional radiation as well as FCC Part 15.109 for unintentional emissions.

FCC regulations

The Connection Manager uses radios (transceivers) and radio communication in its operation. The Connection Manager is a low-power transceiver operating under FCC Part 15.247. No license is required for operation.

DOC statement

The Connection Manager's radio module is also approved for use in Canada. No license is required for operation.

This device complies with RSS-210 of Industry and Science Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Safety information 2

The Telxon Connection Manager is compliant to the ANSI C95.1 (1992) Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields per FCC Docket 93-62.

Scope of the manual 3

This manual provides general information on the Connection Manager's parts and features. It also explains how to install and maintain the unit.

Document conventions

Cautions

Cautions indicate potential damage to equipment. They are set off in the left-hand columns of this manual by the following symbol: **!**.

Notes

Notes provide supplementary information. They are set off in the left-hand columns of this manual and are not preceded by a symbol.

Overview of the Connection Manager 4

The Telxon Connection Manager is designed primarily for use in small stores with less than 12,000 square feet. It acts as a communication link between the store's host computer and one or more Portable Tele-Transaction Computers (PTCs). The Connection Manager can send data to and receive data from the host and the PTCs.

The Connection Manager is wired to the host computer via an RS-232 serial cable or can be connected to an Ethernet network to which the host is connected. The Connection Manager establishes wireless communication links with PTCs used throughout the store. The PTCs, which can consist of any combination of up to eight PTC-921 DOS and/or PTC-960LE units, and the Connection Manager communicate with each other via their internal MiniNet 2.4 radio modules.

Light-emitting diodes (LEDs) on the Connection Manager's front panel indicate the status of power input, error conditions, and communication connections.

Processor

The Connection Manager's 66-MHz AMD Elan SC400 processor is fully IBM PC compatible. It provides exceptional processing speed and is designed for low power consumption.

Operating system

The Connection Manager uses the MS-DOS 6.22 operating system (ROM version).

Memory

The Connection Manager has two types of memory: read-only memory (ROM) and random access memory (RAM).

ROM

The Connection Manager comes with 256 kilobytes (KB) of flash BIOS programmable read-only memory. It is used to store the operating system, BIOS, and flashing kernel.

RAM

The Connection Manager has 4 MB of random access memory. RAM is used to store data the Connection Manager needs while it is running. One MB of RAM is reserved for running the operating system and your application.

Data stored in RAM can be easily read, written, and changed. It is also volatile. All data in RAM will be lost if power to the Connection Manager is terminated.

Radio

The Connection Manager contains a MiniNet 2.4 low-power frequency-hopping radio module. This radio allows the Connection Manager to interactively communicate in real-time with PTCs on a radio-based local area network. It provides secure, interference-free communication and does not require a license for operation.

Entering data

Data can be entered into the Connection Manager via its MiniNet 2.4 low-power frequency-hopping radio module or through its RS-232 COM1 and COM2 serial ports or Ethernet port.

Storing data

Data entered into the Connection Manager can be stored in the PTC's RAM, on the internal 4-MB IDE-compatible solid-state hard drive, or on 3.5-inch, 1.44-MB, high-density floppy diskettes (if your Connection Manager was ordered with the optional floppy drive).

Getting started 5

Unpacking the Connection Manager

Any additional accessories are shipped separately.

Each shipping box contains

- a Connection Manager,
- a 15-VDC, 2.7-A AC adapter,
- a 2.4-GHz antenna,
- a *Connection Manager Read-Me-First Sheet*, and
- a *Connection Manager User's Guide*.

1. Remove the Connection Manager from the box.
2. Remove all packing material from the Connection Manager. Save the packaging in case the unit is ever stored or shipped to Telxon for service.
3. Check the contents of the package to make sure you have received everything ordered.

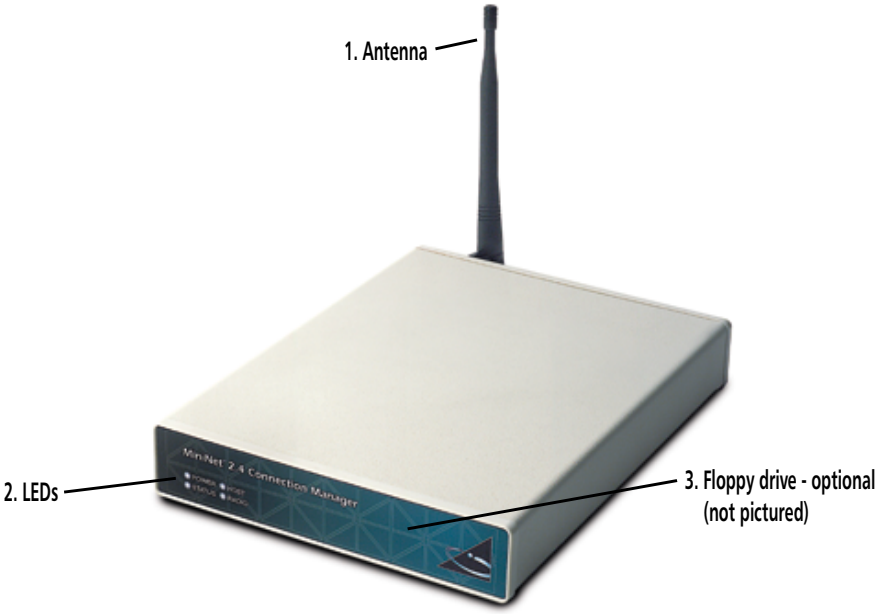
If anything is missing or damaged, notify your Telxon sales representative.

4. Check the Connection Manager for shipping damage.

Parts 6

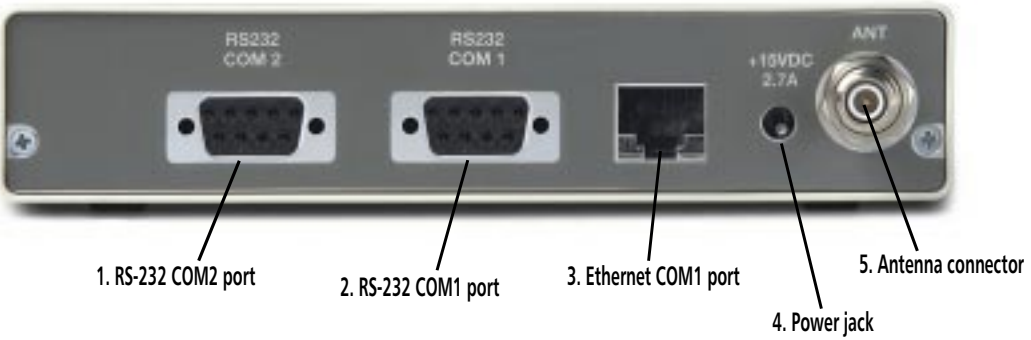
Figures 1 and 2 on the following pages show and describe the external parts of the Connection Manager.

Figure 1. The Connection Manager (front view)



1. A 2.4-GHz antenna attaches to the antenna connector on the back of the Connection Manager. The antenna sends and receives radio transmissions, allowing the Connection Manager to communicate with PTC-921 DOS and PTC-960LE units.
   ! Do not supply power to the Connection Manager or attempt to transmit data unless the antenna is attached; otherwise, the radio may be damaged.
2. These four light-emitting diodes (LEDs) indicate the status of the Connection Manager and its connections. See Appendix C for a detailed interpretation of the unit's LEDs.
3. This optional drive accepts 3.5-inch, 1.44-MB, high-density floppy diskettes. The drive is designed to be used for simple, low-cost software upgrades or to store data.

Figure 2. The Connection Manager (rear view)



1. This 9-pin male connector provides an RS-232 serial interface to a host computer. A standard null-modem cable with a DB-9 connector is required to make this connection. See Appendix B for a list of available cables and Appendix D for this port's pinouts.
2. This 9-pin male connector provides an RS-232 serial interface to a local PC, laptop, or similar device. A standard null-modem cable with a DB-9 connector is required to make this connection. See Appendix B for a list of available cables and Appendix D for this port's pinouts.
3. This RJ-45 connector allows the Connection Manager to communicate with a host computer via an Ethernet network. An Ethernet connection is established by connecting one end of a 10BaseT (twisted-pair) cable to the Connection Manager's Ethernet port and the other end of the cable to a twisted-pair hub on an Ethernet network. Appendix D lists this port's pinouts.
4. A 15-VDC, 2.7-A AC adapter plugs into this connector and an electrical outlet to supply power to the Connection Manager.
5. A 2.4-GHz antenna attaches to this connector to enable radio communications between the Connection Manager and up to eight PTCs.
   ! Do not supply power to the Connection Manager or attempt to transmit data unless the antenna is attached; otherwise, the radio may be damaged.

Features 7

The Telxon Connection Manager performs the following functions:

- Incorporates a PC 486-compatible processor operating at 66 MHz for high-speed performance
- Links PTC-921 DOS and PTC-960LE units to a host computer
- Communicates with PTC-921 DOS and PTC-960LE units via an internal MiniNet 2.4 low-power frequency-hopping radio module
- Provides a standard RS-232 serial interface to the host computer or communicates with the host over an Ethernet network
- Displays the status of power input, error conditions, and communication connections via four LEDs
- Provides an optional 3.5-inch floppy drive for simple, low-cost software upgrades or for storing data

Installing the Connection Manager 8

Follow the instructions in this chapter (in the order provided) to install the Connection Manager and prepare it for operation.

Connecting the antenna

! Do not supply power to the Connection Manager or attempt to transmit data unless the antenna is attached; otherwise, the radio may be damaged.

Screw the supplied 2.4-GHz antenna into the antenna connector on the back of the Connection Manager.
Note: Other available antennas are listed in Appendix B.

Positioning the Connection Manager

The Connection Manager is designed to rest on a flat horizontal surface such as a table or shelf. Try to position the unit in an open, uncluttered area away from much activity.

Connecting the Connection Manager to a host computer

Your Connection Manager can communicate with a host computer via an RS-232 serial connection or through an Ethernet network.

Via an RS-232 serial connection

Equipment required:

See Appendix B for a list of available cables.

- A standard null-modem cable with a DB-9 connector

1. Make sure the Connection Manager is not connected to an electrical outlet.

If the connectors do not connect easily, make sure they are lined up correctly, no pins are bent, and nothing is obstructing either connector.

2. Connect the DB-9 connector on the null-modem cable to the Connection Manager's RS-232 COM2 port (if connecting to the store's host computer) or to the RS-232 COM1 port (if connecting to a local PC, laptop, etc.).

3. Connect the other end of the cable to the host computer or other device.

Via an Ethernet network

Equipment required:

- A 10BaseT (twisted-pair) cable

1. Make sure the Connection Manager is not connected to an electrical outlet.

2. Plug the RJ-45 connector on the 10BaseT cable into the Connection Manager's Ethernet port.

3. Connect the other end of the cable to a twisted-pair hub or concentrator on the Ethernet network to which the host computer is already attached.

Supplying power to the Connection Manager

Equipment required:

- A 15-VDC, 2.7-A AC adapter
- An electrical outlet providing 110 volts AC in the U.S. or Canada

To use the Connection Manager outside of the U.S. or Canada, you need an AC adapter designed for the country's AC voltage supply (e.g., 220 volts).

Connect the AC adapter to the Connection Manager's power jack and an electrical outlet. The Power LED glows solid green when the Connection Manager is receiving power.

Maintaining the Connection Manager 9

The Telxon Connection Manager is well constructed and durable; however, it is a precision electronic device and must be treated as such. Follow the guidelines in this chapter to ensure reliable service.

Operating conditions

Although the Connection Manager is designed to resist dust, dirt, and moisture, it should not be used in excessively dirty or moist conditions. Operate the Connection Manager only in temperatures between 32 degrees F (0 degrees C) and 122 degrees F (50 degrees C).

Handling the Connection Manager

- Do not open the Connection Manager. No user-serviceable parts are inside.
- Do not supply power to the Connection Manager or attempt to transmit data unless the antenna is connected.
- Make sure the Connection Manager is disconnected from power before connecting or disconnecting any cables.
- Make sure the correct cables are used when making connections.
- Protect the Connection Manager from excessive heat, cold, moisture, and harsh, dirty environments.
- Do not leave the Connection Manager where moisture can condense on it.

Moving the Connection Manager

Follow these steps if you need to move the Connection Manager or prepare it for shipment.

1. Disconnect the AC adapter from the electrical outlet and the Connection Manager.
2. Disconnect the antenna.
3. Disconnect all other cables.

If you are moving the Connection Manager a short distance (to a new location in the same building for example), you do not need to use a packing box. Exercise care as you move the Connection Manager to its new location; then follow the procedures in Chapter 8 to reinstall the unit.

If you are shipping the Connection Manager, use the original packing material and container, if available. Otherwise, use a sturdy carton and adequate packing material to protect the unit during shipment.

Cleaning the Connection Manager

Clean the outside of the Connection Manager periodically with a soft cloth moistened with a mild, non-abrasive cleaner, such as Windex. Do not use solvents or abrasive cleaners. Allow the unit to dry thoroughly before reconnecting power.

If the Connection Manager becomes extremely dirty or if liquids, dirt, or other foreign materials get inside the case, contact your Telxon service representative.

Storing the Connection Manager

- Do not store the Connection Manager in temperatures below –22 degrees F (–30 degrees C) or above 140 degrees F (60 degrees C).
- Do not store the Connection Manager in a damp or humid environment (over 95% noncondensing).

Pack the Connection Manager in the original packing material or in a padded box and put it in a safe place away from dust, dirt, humidity, and excessive heat or cold.

Servicing the Connection Manager

Do not attempt to service the Connection Manager. Only a trained Telxon technician may service the unit.

Troubleshooting 10

The Connection Manager does not turn on

- Make sure the AC adapter is properly connected to the Connection Manager's power jack and to a functioning electrical outlet.
- If the unit still does not turn on (indicated by the Power LED), contact your Telxon service representative.

The Connection Manager fails to communicate with the host computer

- Make sure you are using the correct connecting cable.
- Make sure the cable is connected to the correct port on both the Connection Manager and the host.
- Make sure the AC adapter is connected to the Connection Manager's power jack and is plugged into a functioning electrical outlet.
- Make sure the host computer has been turned on.
- If the unit still fails to communicate, contact your Telxon service representative.

A PTC fails to communicate through the Communication Manager

- Make sure the PTC is on.
- Make sure the Connection Manager is receiving power. Check the AC adapter connections at the Connection Manager and the electrical outlet.
- If the PTC still fails to communicate, contact your Telxon service representative.

The Status LED glows solid green

If the Connection Manager's Status LED glows solid green, an error has occurred. Contact your Telxon service representative.

Other problems

If you experience any other problems or difficulties with your Connection Manager that you cannot solve, notify your Telxon service representative or contact the Telxon Customer Support Center at 1-800-800-8010.

Appendix A

Specifications

Communication and I/O

MiniNet 2.4 radio	
Type:	2.4 GHz, low power, frequency hopping
Output:	8 mW
Transmit current:	5 VDC @ <200 mA
Data throughput:	>100 Kbps
Typical indoor range:	150 to 200 ft/45.7 to 61 m
Serial ports	
COM1:	RS-232, male, DB9, up to 115 Kbps
COM2:	RS-232, male, DB9, up to 115 Kbps
Ethernet port	
COM1:	Ethernet 10BaseT, RJ-45, 115 kbps or 10 Mbps
Antenna connector:	Reverse TNC connector supporting one external antenna

Electrical

AC adapter:	Input: 90-240 VAC @ 50/60 Hz Output: 15 VDC @ 2.7 A
Power jack:	Input: 15 VDC @ 1.5 A

Environmental

Operating temperature:	32 to 122 degrees F (0 to 50 degrees C)
Storage temperature:	–22 to 140 degrees F (–30 to 60 degrees C)
Relative humidity:	5 to 95% noncondensing

Shock:	3-ft/.91-m drop to concrete
ESD protection:	15 kV

Mass storage

Hard drive:	4-MB SanDisk Compact Flash IDE-compatible solid-state drive
Floppy drive:	Optional 3.5-inch, 1.44-MB drive

Memory

BIOS ROM (flash PROM):	256 KB
DRAM:	4 MB

Physical

Length:	9 in/22.9 cm
Width:	7.3 in/18.5 cm
Depth:	1.5 in/3.8 cm
Weight:	30 oz/.85 kg (without floppy drive) 51 oz/1.45 kg (with floppy drive)

Processor

Type:	AMD Elan SC400
Speed:	66 MHz

Software

Operating system:	MS-DOS 6.22 (ROM version)

Appendix B

Accessory part numbers

The following table lists part numbers for ordering Connection Manager accessories.

Table 1. Accessory part numbers

Item	Part number
Accessories	
AC adapter (15 VDC, 2.7 A)	
Power supply	20991-000
Power cord	09038-000
2.4-GHz external antennas	
8-in, omni-directional, swivel, whip RTNC	18488-000
3-db omni-directional, 3-ft coax	18506-000
6-db directional corner reflector, 3-ft coax	18383-000
6-db hemispherical patch, 3-ft coax	18384-000
13.5-db Yagi	19729-000
RS-232 serial cables	
Asynchronous null-modem cable, DB9F to DB25F, DTE to DTE, 10 ft	P-80910-000
Asynchronous null-modem cable, DB9F to DB25M, DTE to DTE, 6 ft	13656-323
Asynchronous null-modem cable, DB9F to DB9F, DTE to DTE, 6 ft	16025-000
Manuals	
PTC-921 DOS User's Guide	23451-000
PTC-960LE User's Guide	23053-000

Appendix C

LED codes

This appendix interprets the Connection Manager's light-emitting diodes (LEDs).

Table 2. LED codes

LED	Color	Description
Power	Solid green	Input power is available
Status	Solid green	An error has occurred
	Blinking green	Normal operation
Host	Blinking green	Host data link is active
Radio	Blinking green	Radio data link is active

Appendix D

Pinouts

This section lists the pinouts of the Connection Manager's COM1 and COM2 ports.

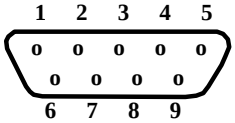


Table 3. RS-232 COM1 and COM2 serial port pinouts

Pin	Signal	Description
1	CD	Carrier detect
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready
5	GND	Ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring indicate

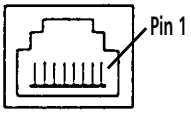


Table 4. Ethernet COM1 port pinouts

Pin	Signal	Description	Twisted-pair number
1	TXD+	Transmit data output +	TP2-1
2	TXD–	Transmit data output –	TP2-2
3	RXD+	Receive data input +	TP3-1
4	NC	No connection	TP1-1
5	NC	No connection	TP1-2
6	RXD–	Receive data input –	TP3-2
7	NC	No connection	TP4-1
8	NC	No connection	TP4-2
Case	Shield	Ground	Shield

Glossary

application	A PC, mainframe, or PTC program that is designed to perform a specific task for a user. Examples include route accounting, payroll, price lookup, shipping, and inventory control.
asynchronous transmission	A transmission with variable time intervals between successive data characters. In asynchronous communication, each character is framed by start and stop bits.
BIOS	Basic Input/Output System.
bit	The fundamental binary unit, either a 1 (on) or a 0 (off). In ASCII code, seven bits represent one character of data.
bps	Bits per second. A rate of electronic data transmission.
CD	Carrier detect signal. CD indicates that the modem is receiving a signal from the remote modem.
CTS	Clear-to-send signal. CTS indicates that the line between a modem and a terminal device is clear for transmission. CTS usually follows a raised request-to-send (RTS) signal.
data communication	The transport of encoded information from one device to another.
DCE	Data communications equipment. A device that controls and converts incoming data or communication. For example, a modem.
DOC	Department of Communications – Canada.
DSR	Data set ready signal. The modem sends DSR to the attached device to indicate that the modem is connected, on, and ready.

DTE	Data terminal equipment. A device comprising the data source. For example, the host computer.
DTR	Data terminal ready signal. The signal sent by the terminal device to the modem to indicate that the terminal is ready for transmission.
ESD	Electrostatic discharge.
FCC	Federal Communications Commission – U.S.A.
frequency-hopping (FH) radio	A type of radio that continually jumps from one frequency to another to avoid interference.
GND	Ground.
hardware	Equipment used in conjunction with programs or data communication.
host computer	A personal computer or mainframe that processes and stores data supplied by other devices.
Hz	Hertz. A unit of frequency equal to one cycle per second.
interface	The connection between two devices, defined by common physical characteristics, signal characteristics, and signal meanings.
I/O	Input/output.
LAN	Local area network. A radio network that supports data communication within a local area, such as within a warehouse or building.
LED	Light-emitting diode. The LEDs serve as indicator lights on the Connection Manager.
mA	Milliampere. A measurement of the ability to provide electrical power.

modem	Modulator-demodulator. A communication device that converts serial digital data from a transmitting device to a signal suitable for transmission over a telephone line and then reconverts the signal to serial digital data for the receiving device.
MS-DOS	Microsoft Disk Operating System.
network	An interconnection of computer systems, terminals, and data communication facilities.
port	A connector on the Connection Manager through which data and instructions are sent to and received from other devices.
PTC	Portable Tele-Transaction Computer. A programmable, battery-powered, hand-held device used for collecting, storing, and transmitting data.
RAM	Random access memory. RAM chips store program files and entered data.
RI	Ring indicate signal. RI alerts a modem to a call waiting on the attached telephone line.
ROM	Read-only memory. In the Connection Manager, ROM stores the operating system, BIOS, and flashing kernel.
RS-232	An Electronic Industries Association (EIA) standard that defines the connector, the connector pins, and the signals used to serially transfer data from one device to another.
RTS	Request-to-send signal. RTS initiates the data transmission sequence on a communication line between a modem and a terminal device.
RXD	Receive data signal. RXD is the data that is being received.
signals	Electronic impulses that transmit data from one device to another.

software	A stored program or set of programs that is loaded into RAM for execution.
two-way communication	The exchange of information between two devices. After each block of data, the receiving device sends a positive or negative acknowledgment to the sending device.
TXD	Transmit data signal. TXD is the data that is being transmitted.
VAC	Volts alternating current. A unit of measure of electric potential or potential difference in a bidirectional electrical current.
VDC	Volts direct current. A unit of measure of electric potential or potential difference in a unidirectional electrical current.

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