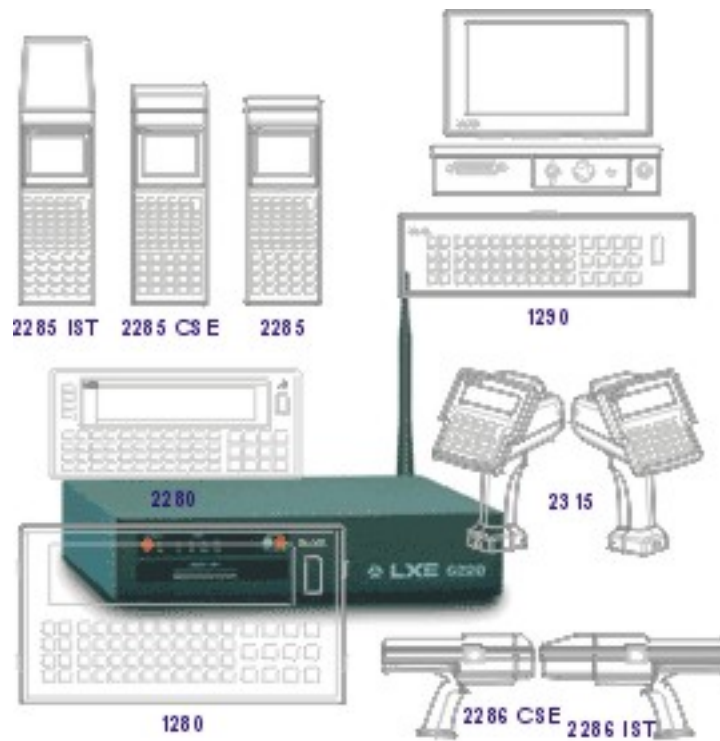


6200 Equipment Reference Guide

IMPORTANT NOTICE

The LXE 6200 equipment, software, 900 MHz and Narrowband radios referenced in this guide are obsolete. This electronic document has been made available as a courtesy to LXE's customers. Please contact your LXE customer support representative for assistance.



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E-EQ-6200EQRG-B-ARC

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Initial Release November 2002

The user/reader is strongly encouraged to read Appendix A, "Regulatory Notices and Safety Information". Important safety cautions, warnings and regulatory information is contained in Appendix A.

Revision Notice

June 2005 Release of Revision B. Standardized document layout for Archive/Obsolete status. 6200 system EOL 30-Jun-2005, expires 30-Dec-2010. Obsolete narrowband radios, 900MHz radios and LXE Legacy equipment.

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Chapter 1 6200 Series System Overview

Introduction

This guide provides operating information for the LXE 6200 Series Terminals and related RF backbone equipment.

Backbone equipment includes Network Controllers (NC) and Radio Frequency Units (RFU). Network controllers are connected to the host through the wired backbone. Radio frequency units are connected to the host wirelessly, through the network controllers. Both units use an LXE installed narrowband or 900MHz radio for wireless data communications.

The terminals are portable computers capable of wireless data communications and powered by a rechargeable Nickel-Metal Hydride (NiMH) or Nickel-Cadmium (NiCd) battery pack and a lithium backup battery. The devices use an LXE installed narrowband or 900MHz radio for wireless data communications.

Most devices that communicate with the host require an installed radio card and an antenna.

Legacy Terminals vs DOS Computers in a 6200 System

Devices used in the LXE Legacy 6200 system (e.g. LXE 12XX vehicle mount and 22XX hand held terminals) are frequently called "LXE RF terminals."

To distinguish between the Legacy terminals and LXE certified DOS computers used in many 6200 systems (e.g. the LXE VX1 vehicle mount and MX1 hand held computers) this guide refers to LXE DOS based mobile RF devices as "DOS computers."

LXE DOS computers used in a Legacy environment usually have a 900MHz radio installed and run these LXE terminal emulators: IBM 3270, IBM 5250, ANSI and LDS. For more information on LXE DOS computers, please refer to the equipment-specific guides on the LXE Manuals CD and the LXE ServicePass website.

Obsolete Equipment

The LXE Legacy RF devices, terminals, 5240/5260 Wireless Modems, 900 MHz and narrowband radios are obsolete. The information contained in this guide relating to this equipment has been made available as a courtesy to LXE's Legacy customers. Please contact your LXE customer support representative for assistance with these units or upgrade to newer models.

As equipment is placed on the obsolete list (quite often due to the rapidly changing nature of the RF environment), LXE makes every effort to support, service and repair the equipment until it is no longer repairable/serviceable. Please contact your LXE representative for replacement equipment or software.

Obsolete 6200 System Equipment and Software as of June/July 2005

3270 Terminal Emulation	NC/RFU - 6220, 6230, 6280, 6281
5250 Terminal Emulation	Terminal - 1280, 1290, 2280, 2285, 2286, 2315
ANSI Terminal Emulation	Modem - 5232, 5420, 5460
LDS I and LDS II Terminal Emulation	DOS Computer - 1320, 1330, 2320, 2330
6200 Network Management Workstation (Console)	

Getting Help








LXE user guides are now available on CD and they can also be viewed/downloaded from the LXE ServicePass website. Contact your LXE representative to obtain the LXE Manuals CD or access to the LXE ServicePass website. You can also check the LXE ServicePass website for the latest manual releases.

Note: Obsolete/archived manuals are not available on the LXE Manuals CD. They are available for download from the ServicePass website only.

You can get help from LXE by calling the telephone numbers listed on the LXE Manuals CD, in the file titled "Contacting LXE". This information is also available on the LXE website.

Explanations of terms and acronyms used in this manual are located in the file titled "LXE Technical Glossary" on the LXE Manuals CD and on the LXE website.

Document Conventions

ALL CAPS	All caps are used to represent disk directories, file names, and application names.
Menu Choice	Rather than use the phrase "choose the Save command from the File menu", this manual uses the convention "choose File Save".
"Quotes"	Indicates the title of a book, chapter or a section within a chapter (for example, "Document Conventions").
< >	Indicates a key on the keyboard (for example, <Enter>).
	Indicates a reference to other documentation.
	Differences in operation or commands due to radio type.
ATTENTION	Keyword that indicates vital or pivotal information to follow.
	Attention symbol that indicates vital or pivotal information to follow. Also, when marked on product, means to refer to the manual or operator's guide.
	International fuse replacement symbol. When marked on the product, the label includes fuse ratings in volts (v) and amperes (a) for the product.
<i>Note:</i>	Keyword that indicates immediately relevant information.
CAUTION 	Keyword that indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
WARNING 	Keyword that indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
DANGER 	Keyword that indicates a imminent hazardous situation which, if not avoided, will result in death or serious injury.

6200 System Overview

The LXE 6200 network controller (NC) and radio frequency unit (RFU) form the backbone of a 6200 radio frequency data communication (RFDC) system. The RFU and NC provide a wireless link between your host computer and LXE radio frequency (RF) terminals.

Radio Frequency Data Communication

With an LXE radio frequency data communication system you can collect data in real-time with mobile devices.

Radio Frequency Data Communication (RFDC) uses radio transceivers rather than wire-linked terminals as part of the communication channel.

Network Diagrams

The following illustration compares a conventional wire-linked system to a Legacy radio frequency data communication system:

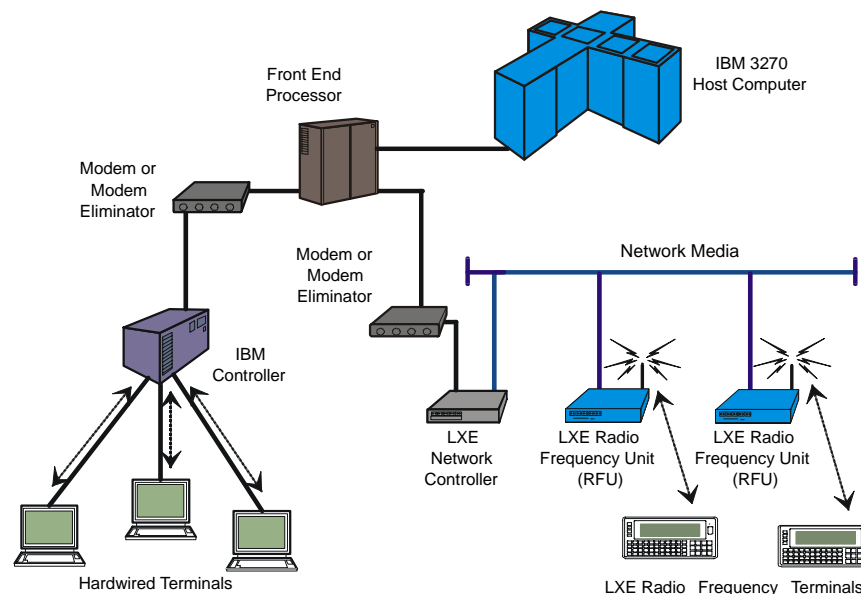


Figure 1-1 3270 Wire Linked System and RF System

The *wire-linked system* physically links a host computer to remote terminals with wires. This link obviously restricts the mobility of the terminal users and prevents them from moving about freely (as in a warehouse application).

A *radio frequency data communication system* uses radios to link remote terminals to a host computer. RFDC allows terminal users to roam while communicating with a host application in real-time.

System Components

RFDC System

The following diagram shows a basic LXE-based radio frequency data communication system:

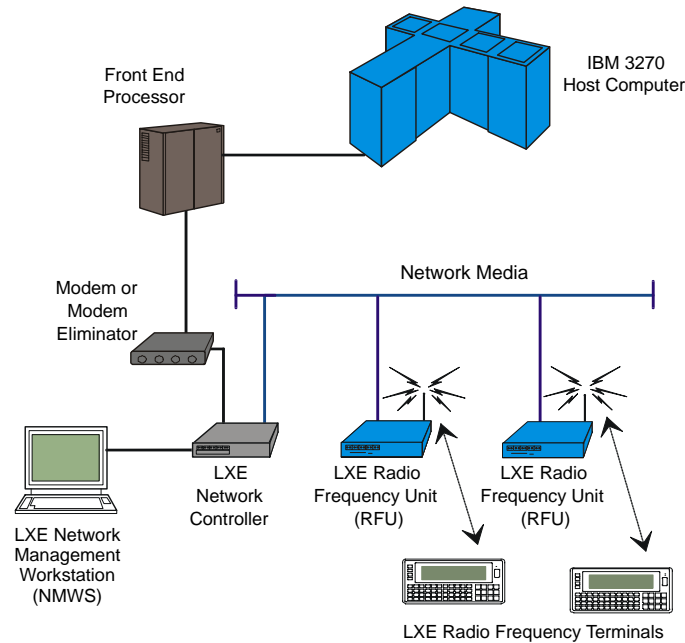


Figure 1-2 LXE Radio Frequency Data Communications System

Communication Controller	An IBM device used to control and maintain long distance communication between the IBM host and remote IBM users.
Network Management Workstation	LXE-provided software running in a personal terminal and computer that enables you to interact with the network controller.
Host Computer	A computer system that runs application programs and maintains data bases.
Modem or Modem Eliminator	A device that enables the Network Controller to communicate with the host computer.
Network Controller (NC)	An LXE device that monitors and manages message flow between the host computer and the RF terminals and computers.
Radio Frequency Unit (RFU)	An LXE device that links the NC to the terminals. The RFU transmits data to and receives data from the mobile terminals and computers using radio waves.
RF Terminal	An LXE device that an operator uses to communicate with the host computer. The RF terminal transmits data to and receives data from the RFU using radio waves.

Network Controllers and Radio Frequency Units

Technical information for the devices shown in the following figure are in Chapter 5 “Technical Specifications.”



Figure 1-3 Network Controller / Radio Frequency Unit with Antenna



Figure 1-4 Type 4 Enclosure contains Radio Frequency Units

Network Controllers (NC)

Sends / receives the messages coming from the wireless units to the host application and from the host application to the wireless units. A network controller is connected to the wired backbone of the 6200 network. LXE's entry level 6210 is ideally suited for smaller facilities of less than 150,000 square feet. The 6210 has an integrated radio and host connectivity for Ethernet or Token-Ring. It can also support up to 32 terminals. For medium to large sized facilities, LXE's 6220 and 6230 can effectively manage up to 128 terminals. It has a maximum possible configuration of 64 network controllers and radio frequency units working together on the same network. The 6230 has an internal radio transceiver for additional RF coverage.

Features

Technical specifications for network controllers are in Chapter 5 – “Technical Specifications.”

6210 Network Controller

- Integrated Radio.
- No additional RFU support needed.
- Supports up to 32 terminals.
- Designed for smaller systems where the controller can be located in the coverage area.
- Supports a local or remote antenna.
- The compact design of the 6210 integrates host connectivity with radio capabilities into a single unit thus eliminating the need for an external Radio Frequency Unit.
- The 6210 is designed for use in a fairly clean environment without high dust, moisture or vibration exposure.

6220 Network Controller

- External Radio Frequency Unit.
- Supports up to 128 terminals.
- Supports up to 60 RFUs.
- System designed for locations where Network Controller needs to be remote from the coverage.
- Designed for use in medium or large sized facilities.
- Manages up to 128 terminals and up to 60 RFUs interconnected on an Ethernet or Token Ring backbone.

6230 Network Controller

- Integrated Radio.
- Can be configured without RFUs for later system expansion.
- Designed for systems where the NC can be located in the coverage area.
- Supports a local or remote antenna.
- Designed for use in medium to large sized facilities.
- The 6230 supports up to 128 separate terminals and up to 59 Radio Frequency Units in addition to it's integrated radio.

Radio Frequency Units (RFU)

A wireless RF device that passes messages coming from the wireless units to the Network Controller and then passes the messages coming from the Network Controller to the wireless units. An RFU is not connected to the wired backbone of the 6200 network.

NEMA Type 4 Enclosure

The LXE 6280 radio frequency unit extends RF coverage into isolated departments or different buildings without the need for a separate network controller. The 6280 functions as an industry standard Ethernet or Token-Ring network node. The LXE 6281 is a NEMA 4 certified radio frequency unit that can withstand water and wind blown dust. The 6281 is excellent for outdoor coverage and also has a heater option for cold temperature operations down to -22° F.

Features

Technical specifications for network controllers is contained in Chapter 5 – “Technical Specifications.”

6280 Radio Frequency Unit

- Same hardware design as 6210/6220/6230 Network Controllers.
- Only Half-Duplex RF (Send/Receive Sequential).
- Ethernet or Token Ring interconnect to the NC.
- Provides the RF interface between the wireless terminals and the Network Controller.
- Designed to be used when the coverage area is separate from the location of the Network Controller.
- Similar in external design to 6200 series Network Controllers and shares many common internal components.

6281 Radio Frequency Unit

- Same functional design as the 6280 RFU.
- NEMA enclosure.
- Equipped with a heating element for operation in cold environments.
- A radio frequency unit in a weatherproof, heated NEMA enclosure.
- It is designed to be installed outdoors.
- Can be used in conjunction with either a 6220 or 6230 Network Controller.

Components

NC and RFU Front Panel Components

The 6210, 6220, 6230, 6280, and 6281 share most of the same front panel components.

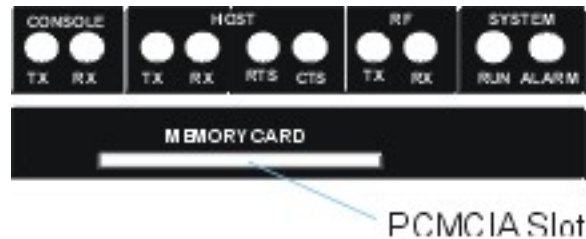


Figure 1-5 NC Front Panel

MEMORY CARD	The MEMORY CARD slot of the 6210, 6220, and 6230 accepts a Personal Computer Memory Card Industrial Association (PCMCIA) memory card to download software into Flash RAM .
CONSOLE TX	The CONSOLE TX LED lights when the 6200 transmits data to the network management workstation.
CONSOLE RX	The CONSOLE RX LED lights when the 6200 receives data from the network management workstation.
HOST TX	The HOST TX LED lights when the 6210, 6220, or 6230 transmits data to a non-TCP/IP host.
HOST RX	The HOST RX LED lights when the 6210, 6220, or 6230 receives data from a non-TCP/IP host.
HOST RTS	The HOST RTS LED lights when the 6210, 6220, or 6230 requests to send data to a non-TCP/IP host.
HOST CTS	The HOST CTS LED lights when a non-TCP/IP host determines that the 6210, 6220, or 6230 is clear to send data.
RF TX	The RF TX LED is always lit on a 6210, 6230, 6280, or 6281.
RF RX	The RF RX LED is always lit on a 6210, 6230, 6280, or 6281 running narrowband. This LED may not be visibly lit in a spread spectrum application.
SYSTEM RUN	The SYSTEM RUN LED blinks on and off when the 6200 firmware is operating.
SYSTEM ALARM	The SYSTEM ALARM LED lights when an alarm (fault) condition is detected.

Ethernet 6200 Rear Panel Components



Figure 1-6 Ethernet 6200 Rear Panel Components

Antenna Connector	Connects an RF antenna to the 6210, 6230, or 6280. An antenna connector is not present on a 6220.
Power Panel	Connects an AC power source to the 6200 product and switches power to the 6200.
Ethernet Ports	The Ethernet ports (THIN NET, AUI, and TPE) enable you to use different types of cable to connect the 6200 product to the Ethernet.
THIN NET	The THIN NET port connects to Thinnet cable, as defined by the IEEE 802.3 10Base2 specification. Thinnet is RG 58A/U coaxial cable.
AUI	The Attachment Unit Interface (AUI) port connects to a transceiver that connects to the IEEE 802.3 standard 10Base5 backbone coaxial cable, also known as thick Ethernet.
TPE	The Twisted Pair Ethernet (TPE) port is a RJ-45 modular telephone connector that connects to IEEE 802.3 standard 10BaseT twisted pair cable. <i>Note: Early versions of the Ethernet 6200 series did not feature a TPE port. A twisted pair connection is made with an adapter attached to the AUI connector.</i>
RXD	The RXD (Receive Data) LED lights when the 6200 series device receives data from the Ethernet.
TXD	The TXD (Transmit Data) LED lights when the 6200 series device transmits data to the Ethernet.
ID Tag	A paper tag printed with two sets of numbers. The upper set is the LXE part number; the lower set is the hex representation of 3 bytes of the 48-bit universally-administered hardware address that is burned into a prom on the interface board.
AUX Port	An RS-232 (DTE only) connection between a non-TCP/IP host and the 6200 series network controllers. A 3270 or 5250 V.35 connection is achieved using the AUX port and an external converter. Connection to a 3270 host on a Token-Ring is achieved from the AUX port with an external converter. Connection to a 5250 host on a Token-Ring requires two external converters.
Console Port	Connects to the network management workstation.

Token-Ring 6200 Rear Panel Components



Figure 1-7 Token-Ring 6200 Rear Panel Components

Antenna Connector	Connects an RF antenna to the 6210, 6230, or 6280. An antenna connector is not present on a 6220.
Power Panel	Connects an AC power source to the 6200 product and switches power to the 6200.
Token-Ring Ports	The ports (UTP and STP) on the rear panel of the 6200 device enable you to use different types of cable to connect the 6200 network controllers and RFUs to the Token-Ring.
UTP	The Unshielded Twisted Pair (UTP) port is an RJ-45 modular telephone connector that connects to IBM type 3 or EIA/TIA category 3, 4, or 5 unshielded twisted pair cable.
STP	The Shielded Twisted Pair (STP) port is a D-9 connector that connects to IBM type 1, 2, 6, or 9 shielded twisted pair cable.
UTP-STP Selector	A switch that enables you to select the correct port.
ID Tag	A paper tag printed with two sets of numbers. The upper set is the LXE part number; the lower set is the hex representation of 3 bytes of the 48-bit universally-administered hardware address that is burned into a prom on the interface board.
RDY	The RDY (Ready) LED remains on during normal operation of the 6200 series device.
ERR	The ERR (ERROR) LED lights momentarily when the 6200 series device is turned on. The ERR LED remains on when the device is disconnected from the Token-Ring and remains off during normal operation.
AUX Port	An RS-232 (DTE only) connection between a non-TCP/IP host and the 6200 series network controllers. A 3270 or 5250 V.35 connection is achieved using the AUX port and an external converter. Connection to a 3270 host on a Token-Ring is achieved from the AUX port with an external converter. Connection to a 5250 host on a Token-Ring requires two external converters.
Console Port	Connects to the network management workstation.

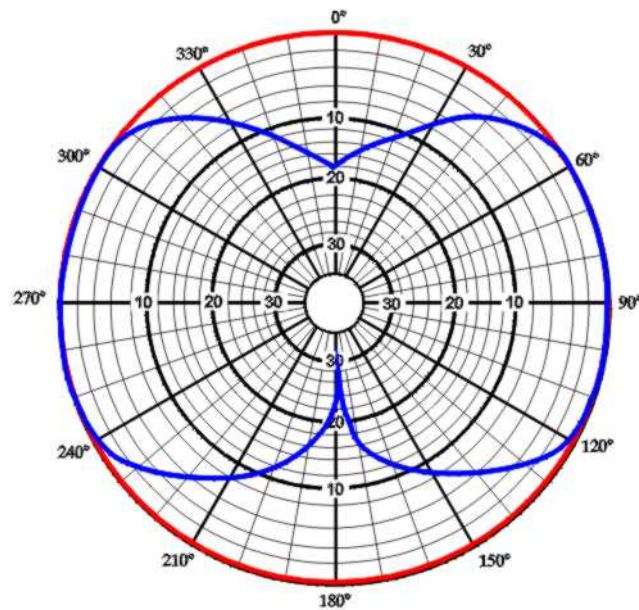
Omni Antennas

LXE 6200 devices use a 0db gain Omnidirectional antenna exclusively.

Omnidirectional antennas have a spread out coverage area that radiates and receives from all directions. Coverage area is not consistent but tends to increase and decrease depending on where coverage is being measured around the antenna.

Omni directional antennas are useful for extending the range of an access point allowing client access from greater distances. They also can be used for setting up point to multipoint links (many directionals pointed at your high gain omni). The omni directional antenna has a radiation pattern shaped like a doughnut or pancake. The power that would be transmitted in the upward and downward directions are instead aimed out the side. The more gain the antenna has, the flatter the pattern is.

Omnidirectional Antenna Pattern



LXE can supply antennas for practically any environment. Antenna abilities are altered by the RF environment and their placement; such as building construction, building contents and outside RF interference.

Factors that impact antenna performance include Tx/Rx frequencies, location of the antenna and cabling.

Network Management Workstation

The *network management workstation* (NMWS) is the LXE-provided software running in a personal computer (PC) that enables you to enter configuration data or to read diagnostic counters in LXE Network Controllers (NC) or Radio Frequency Units (RFU).

Extensive help screens are available on the NMW. The help system is context sensitive -- when help is requested a help screen displays information that directly relates to the data or current screen activity.

NMW Main Menu Options

File	New, Open, Save, Save As, Delete, Connect, Quit
Monitor	View Monitor Choices
Configure	Host Link, Router Table, Network, Terminal, Wireless Modem, Autologin, Console, Passwords, Monitor, Initialize, Upgrade, Resync Time, Exit
Diagnose	Host Link, RF Link, Connect Header, Text File, Event Log, OS Event Log
Help	General Help, Edit Help Hot Keys, Current System

Previous versions of the NMWS ran on a PC physically connected to the serial port of one of the 6200 units in the system. The NMWS could then “logically” connect to any other unit in the system, but still required a physical connection to the one unit’s COM port.

Beginning with version 3.4 of the NMWS, the option of a network connection was added. The PC running the NMWS can connect with any of the 6200 units directly over the network. The serial connection is no longer necessary unless it is a first time connection to a 6200 unit whose NVRAM has been cleared. When the NVRAM has been cleared, the IP address of the 6200 unit is set to 0.0.0.0, making it impossible to reach the 6200 unit by remote means.

In previous versions of the NMWS, the serial connection allowed the NMWS to only access the OS of the serially connected unit. Using the network connected version, the NMWS can have a TELNET connection to each unit in the 6200 system.

Along with access to the OS on every networked 6200 unit, the latest version of the NMWS also adds a new method to program a 6200 unit’s flash executable code. Previous versions relied on PCMCIA cards used as storage media. The PCMCIA cards were read by the 6200 unit to transfer the flash executable into the 6200 unit’s memory. A new FTP transfer method to reprogram the flash has been added to the latest revision of the software. In the past, flash programming via FTP was complicated, so it was used primarily by LXE developers.

Details on the new FTP remote configuration feature is included in “OS Shell Commands”, in the “Network Management Workstation Reference Guide” on the LXE Manuals CD.

The NMWS may be started in either the network mode or the serial mode. If the NMWS is started in network mode and the network connection cannot be made, the NMWS reverts to the serial mode. The network version of the NMWS must be run under Windows 95, 98 or NT. On a DOS platform, the NMWS must use the serial mode. The serial mode may also be used under Windows, provided the serial port selected is not being used by another device such as a modem or mouse.

Reference Manual : E-SW-6200NMWS[Revision] “6200 Network Management Guide”

Chapter 2 LXE Legacy Terminals

LXE RF Terminals

LXE RF terminals serve different categories of users. All terminals have the same RF function but have different features according to type.

Technical information for the terminals shown in the following figure are in Chapter 5 “Technical Specifications.”



Figure 2-1 LXE 6200 Series RF Terminals

Reference Manual : E-INS-6200HW[Revision] “Hardware Installation Guide”

Model	Features
1280	The 1280 can be mounted on a desk, workstation, or vehicle, such as a forklift. The 1280 has a 40 column by 8 line display.
1290	You can mount the 1290 on a vehicle, on a wall, or on a desktop. The 1290 has a full screen, 80 column by 25 line display. The 1290 CPU is housed in a separate enclosure.
2280	You can carry the 2280 by hand, in a holster, or mount it on a vehicle or wall. The 2280 has a 40 column by 8 line display.
2285	The 2285 has a 20 column by 8 line display.
2285 CSE	The 2285 CSE has an integrated scanner and an optional grip that enables single-handed operation. It has a 20 column by 8 line display.
2285 IST	The 2285 IST has an integrated scanner and a 20 column by 8 line display.
2315	The 2315 has an integrated scanner, a 40 column by 8 line display, and either a 19-key or 29-key keypad mounted on a grip that enables single-handed operation.

Connectors

LXE RF terminals (except for the 2285 IST, the 2285 CSE, and the 2315 which have built-in scanners) have a standard barcode port. An optional RS-232 port is also available on some models.

Features

- RF terminals provide mobile, real-time communications in a rugged, industrial package. Working with the LXE 6200 network controller series, LXE terminals offer industry-standard emulations of IBM 3270, IBM 5250, ANSI (TCP/IP Telnet or DEC LAT) and LDS. Terminals can roam at will from one RF zone to another without losing contact with the host computer.
- Two-way communication is provided by a built-in radio. The interchangeable radio modules are offered for LXE frequency hopping spread spectrum and frequency synthesized narrowband RF systems. Power levels vary by country.
- Terminals have diagnostic routines resident in software to monitor the radio link performance and unit status. Error checking of messages is accomplished by a 16 bit Cyclical Redundancy Check (CRC).
- Keyboards are available in both ABCD and QWERTY layouts (2285/2286 are available only with ABCD). The keys are made of non-conductive rubber and are designed to be operated even while wearing heavy work gloves.
- LXE terminals are built to operate in temperatures ranging from 0° to 120°F. Some 22XX and 1280 models have an extended temperature range option of -22° to 122°F (-30° to 50°C). Units are sealed against water, dust, and dirt.
- LXE Wireless Terminals have sealed tactile keyboards that provide full alphanumeric operation and 40 (24 IBM) function keys (2315, 19 key excepted).




- Separate passwords provide the operator and the supervisor with different levels of access to the terminal setup. This enables the operator to configure the terminal to their needs while preventing any accidental damage to the terminal setup.
- Hot keys change emulations (ANSI/IBM/LDS) and channels (Narrowband only) and can provide switching between primary and secondary network controllers.
- Terminals display languages include US ASCII, Danish, Generic European, Swedish ASCII, Swedish IBM and German.
- LXE terminals come with a standard barcode port (or integrated barcode scanner) and an optional RS-232 port. A scanner aiming beam timer is included. Barcode firmware supported are Code 39, Interleaved 2 of 5, Discrete 2 of 5, UPC-A, UPC-E, Code 128, Code 11, EAN-8, EAN-13, and Codabar.

Cleaning the Glass Display/Scanner Aperture

Keep fingers and rough or sharp objects away from the scan aperture and display. If the glass becomes soiled or smudged, clean only with a standard household cleaner such as Windex(R) without vinegar or use Isopropyl Alcohol. Do not use paper towels or harsh-chemical-based cleaning fluids since they may result in damage to the glass surface. Use a clean, damp, lint-free cloth. Do not scrub optical surfaces. If possible, clean only those areas which are soiled. Lint/particulates can be removed with clean, filtered canned air.

Radiological Hazards and Warning Labels

- Do not look into the laser's lens.
- Do not stare directly into the laser beam.
- Do not remove the laser caution labels from the device.
- Do not connect the laser barcode module to any other device. The laser barcode module is certified for use with the designated device only.

Warning: 	<i>Do not look directly into the window area or at a reflection of the laser beam while the laser is scanning. Exposure to the laser beam can damage your vision.</i>
Caution: 	<i>Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.</i>
Caution Labels: 	<i>This product uses laser light. One of the following labels is provided on the scanner. Please read the Caution statement.</i>

Please refer to Appendix A “Regulatory Notices and Safety Information“ for foreign language translations of these warnings and cautions

Laser Warning Label Locations (2285-IST)

Refer to the following figures for the location of Radiological Hazards and Warning Labels on the 2285-ISTs.

These labels are presented here as an example of the types of labels and warnings placed on LXE terminals.

Certification and Identification:

LXE 2285 scanner complies with 21 CFR, Chapter 1, Subchapter J.

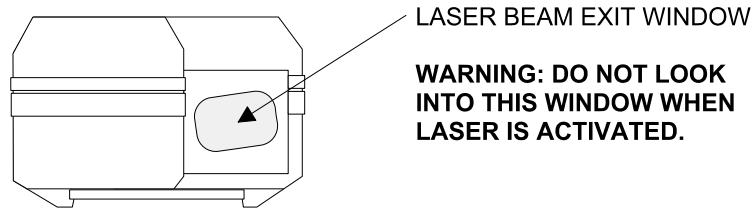


Figure 2-2 Scanner 2285L86, L87, L88 (Front View)

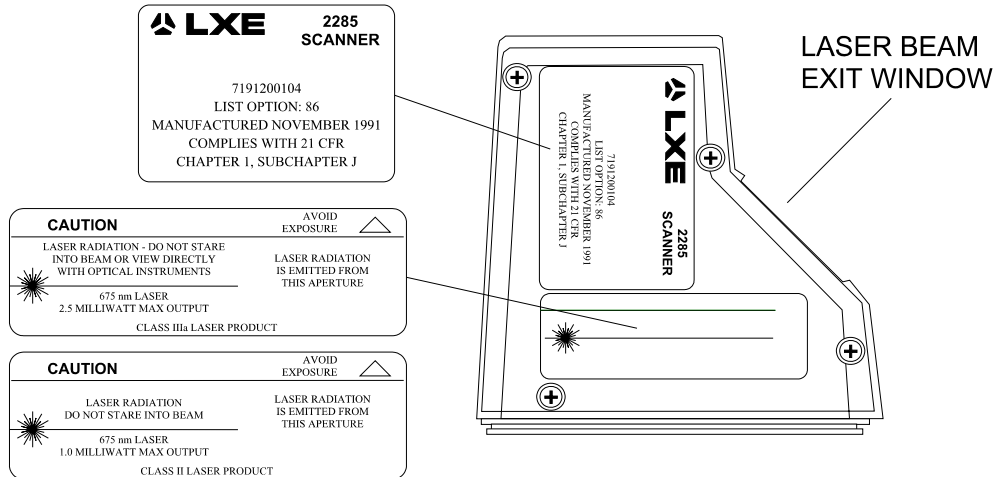


Figure 2-3 Scanner 2285L86, L87, L88 (Bottom View)

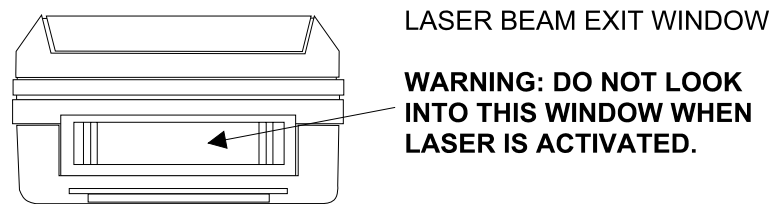


Figure 2-4 Scanner 2285L82, L83 (Front View)

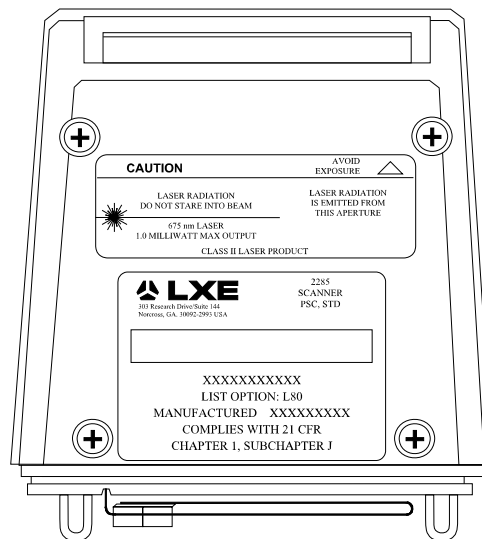


Figure 2-5 Scanner 2285L80, L81 (Bottom View)

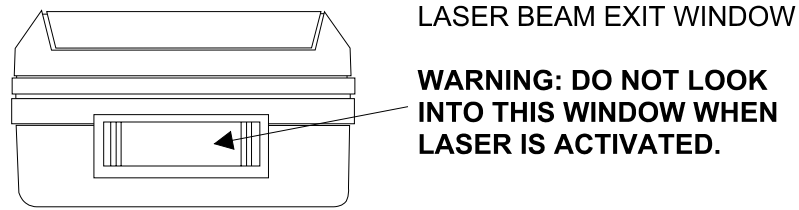


Figure 2-6 Scanner 2285L90 (Front View)

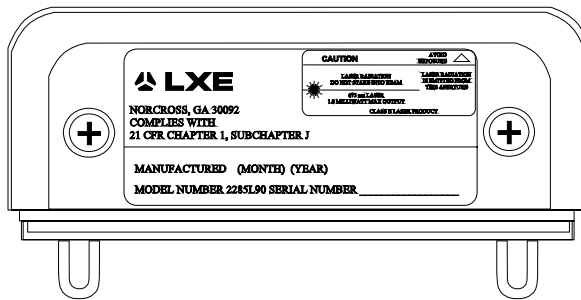


Figure 2-7 Scanner 2285L90 (Bottom View)

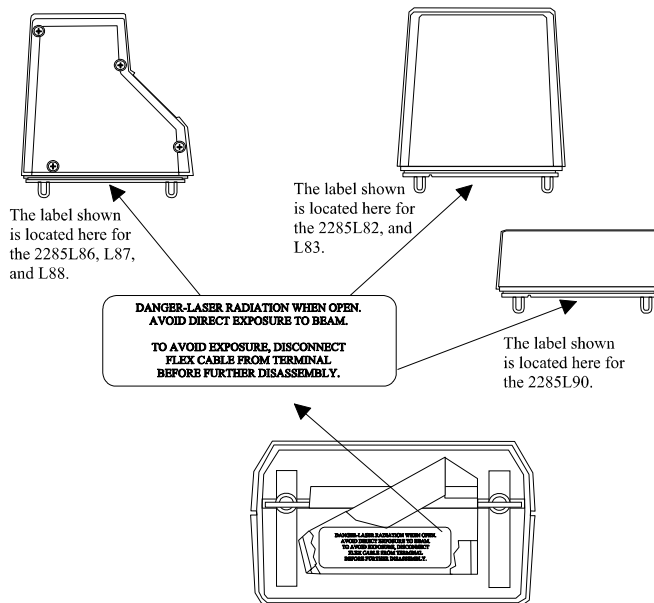


Figure 2-8 Scanner All Options (Back View)

Types of Scanners

The 2285 IST, the 2285 CSE and the 2315 terminals have built-in (or integrated) scanners. The rest of the terminals connect (tether) a hand held scanner to the unit's barcode port. An optional RS-232 port is also available on some models.

Integrated Scanners

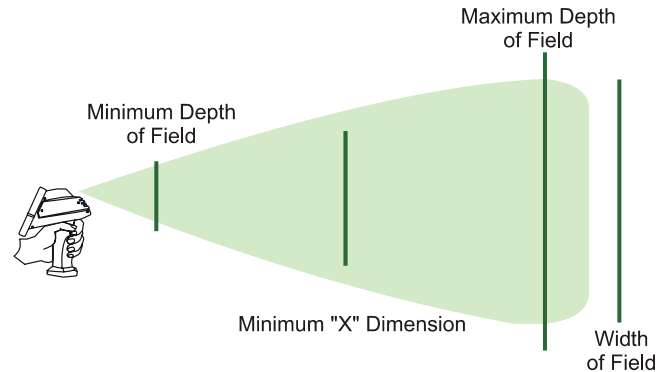


Figure 2-9 Barcode Scanning Range

Minimum Depth of Field Minimum label distance from scanner.
 Minimum X Dimension Smallest size of barcode label the scanner can read.
 Maximum Depth of Field Maximum label distance from scanner.

Model	Field Depth	Laser Class	Minimum X	Min/Max Depth
2285	Standard	II	6 mils	2.5"/23.5"
2285	Long	II	15 mils	10"/66"
2286	Standard	II	6 mils	2.5"/23.5"
2286	Long	II	15 mils	10"/66"
2315	Standard	II	5 mils	0"/35"
2315	Long	II	10 mils	9"/210"

Tethered Scanner Ranges

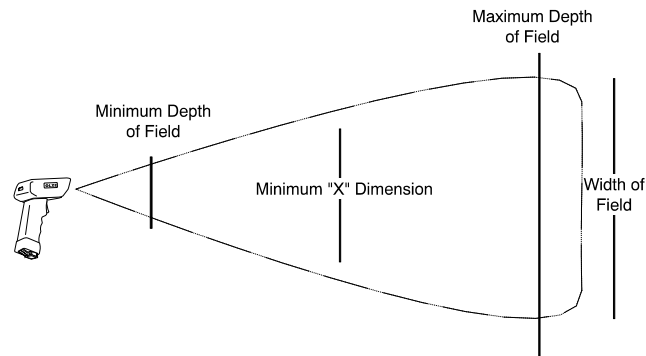


Figure 2-10 Barcode Scanning Range

Minimum Depth of Field Minimum label distance from scanner.
 Minimum X Dimension Smallest size of barcode label the scanner can read.
 Maximum Depth of Field Maximum label distance from scanner.

Model	Field Depth	Laser Class	Minimum X	Min/Max Depth
3600	Standard	II	5 mils	1"/35"
3603	Standard	II	4 mils	2"/55"
3203	Multi	II	7.5 mils	4"/35'
5312IP	Standard	II	6 mils	0"/ 30"
5322IP	Standard	II	6 mils	3"/ 7"
5342IP	Adv. Long	II	15 mils	18"/ 76"
5300-52	Long	II	15 mils	6"/ 66"
5362IP	Short	II	2 mils	1"/ 5"
5300-72	X-Long	IIIA	15 mils	3'/ 35'
5380	Standard	II	5 mils	0"/ 24"
5381	Standard	II	7.5 mils	1"/ 24"
5385	Standard	II	7.5 mils	1"/ 24"
5300-92IP	Long	II	7.5 mils	.5'/ 40'

Figure 2-11 Tethered Scanner Laser Range Specifications

Standard Range (SR)

The minimum range for a standard range scanner is 1 inch (2.54cm) and the maximum is 3 feet or 36 inches (91.44cm). Sample applications include receiving; shipping; hospital patient identification; time and attendance; and reading barcoded menus. The scanners in this class include the 5310, 5380, and the LS3000 SR.

Long Range (LR)

The minimum range for a long range scanner is about 6 inches (15.24cm) and the maximum is 6 feet or 72 inches (1.83m). Sample applications include picking, receiving, and reading rack labels. The scanners in this class include the 5350 and the LS3000 LR.

Advanced Long Range (ALR)

The minimum range for an advanced long range scanner is 2 feet (61cm) and the maximum range is 8 feet (2.44m). Sample applications include picking, shipping, cross-docking, receiving, or any application where the operator wants to read barcode labels from a vehicle. Some of these scanners also read labels made from retro-reflective materials. These are special labels that give some ALR scanners ranges up to 20 feet (6.1m). The scanners in this class include the 5340 and the LS3000 ALR.

Extra (Extended) Long Range (XLR)

The minimum range for an extra long range scanner is 3 feet (91.44cm) and the maximum range using conventional paper labels is 20 feet (6.1m). Retro-reflective labels allow certain types of XLR scanners to read from as far as 35 feet (10.67m) away. Sample applications include any type of operation using bulk storage locations. Barcode labels can be hung from the ceiling above the bulk storage locations and can be read using these XLR scanners. The scanners in this class include the 5370, 5390, and the LS3000 XLR.

High Visibility (HV)

The minimum range for a high visibility scanner is 1 inch (2.54cm) and the maximum range is 2 feet (61cm). Sample applications include any operation where you must read a barcode label through glass or in the sunshine. These scanners were made to read a vehicle identification number (VIN) barcode label, which is commonly found on the dashboard of an automobile. Scanners in this class include the 5320 and LS3000 HV.

High Density (HD)

The minimum range for a high density scanner is 2 inches (5.08cm) and the maximum range is 10 inches (25.4cm). These scanners were made to read very small barcode labels. Sample applications for these scanners include reading labels printed on printed circuit boards, test tubes, and other small components. Scanners in this class include the 5330 and the LS3000 HD.

Supported Barcode Symbolologies

The following describes the barcodes that LXE supports. See the Hardware Setup Menus in the “Terminal Setup” chapter of the specific terminal emulation guide for instructions on how to configure the LXE terminal to use these different barcode symbolologies.

Code 39 (C39)

Standard Code 39 encodes capital letters, numbers and a few special characters. The LXE terminal can also decode Extended Code 39, which includes the complete ASCII character set. You can specify an optional check character for use with either standard or extended C39.

Discrete 2 of 5 (C25)

Discrete 2 of 5 is a numeric only code that has been superseded by Interleaved 2 of 5, which has the same decode capabilities but uses a much smaller space.

Interleaved 2 of 5 (I25)

Interleaved 2 of 5 has the same decode capabilities (numeric only) as Discrete 2 of 5, yet uses a much smaller space by interleaving two characters. I25 requires an even number of characters and inserts a leading zero when it encounters an odd number of characters in a barcode label. A major problem with Interleave 2 of 5 is the potential for partial reads. For example, the terminal could decode barcode 123456 as 3456.

IL1 and IL2

IL1 and IL2 enable you to set two distinct lengths for the Interleaved 2 of 5 code. If IL1 is set to 6 and IL2 to 8, the terminal will not decode Interleaved 2 of 5 barcode labels with character lengths of 2, 4, 10, or 12.

To read Interleaved 2 of 5 codes of more than two lengths, you must set IL1 and IL2 to zero, which enables the terminal to read any length of Interleaved 2 of 5 codes.

MSI Plessey (PLS)

MSI Plessey has 3 variant codes: MSI, Telxon, and Anker. LXE's PLS parameter reads all of the variants and treats all of the check characters the same.

Code 11 (C11)

Code 11 is used to satisfy specialized requirements for very high density, discrete barcode labels capable of encoding numeric data. C11 is so named because it can represent 11 different characters (10 digits and a dash). Data security is enhanced by using one or more check digits. It is recommended that the X dimension of Code 11 barcodes be 7.5 mils. This limits the scanning range to about 1 foot (30.5cm) at its maximum (with VLD scanners).

Code 128 (128)

Code 128 is so named because it was the first decode of the complete 128 ASCII character set. Code 128 claims to be the most compact, complete, alphanumeric symbology available. LXE terminals can decode 128A, 128B, 128C, EAN-128, and 128 Auto.

UPC

The Uniform Product Code is the most widely used and recognized barcode in the world. The UPC is a numeric-only barcode. LXE can autodiscriminate between the UPC-A and UPC-E versions of the code, which are 12 and 6 digits respectively. On a typical 12 digit code, the first number is an item code, the next five digits represent the manufacturer's ID number, the next five digits represent the product ID number, and the last digit is a check digit.

EAN

The European Article Numbering code is derived from the UPC code, and is used mainly on the European Continent. There are several versions of EAN. LXE supports the reading of EAN-8 and EAN-13, which are eight and 13 digit codes, respectively. The basic difference between EAN and UPC is that EAN uses the first two digits of the code to identify the product's country of origin. LXE can autodiscriminate between EAN-8 and EAN-13.

Using the Laser Scanner

Non-contact moving-beam scanners use laser light for illumination. The beam automatically moves (scans) when the trigger is pulled. The scan rate may be more than 40 times per second.

How To

Point the laser aperture at a barcode and press the key or button that activates the laser.

- A red light emitting diode (LED) indicates the unit is actively scanning.
- The Scan LED turns green to indicate when a barcode was successfully read (a good scan).

Do not pour, spray, or spill any liquid on the scanner. The Barcode Scanner contains the circuitry, scanning motor and laser. Handle with appropriate care.

Aiming the Barcode Scanner

Aim the scanner away from you, direct it at the barcode and press the trigger to scan.

The Scan LED (indicator is located directly below the display) turns red to indicate the scanner is on.

Adjust the aim so that the narrow, red laser beam covers the entire length of the barcode.

The scan beam must cross every bar and space on the barcode.



Figure 2-12 Scan Beam

Make sure the barcode is within the scanning range.

The range of a scanner is dependent upon many outside influences including size of the barcode, quality of the barcode printing, material the barcode is printed on, and angle of the scanner beam relative to the barcode label. Any of these factors may result in having to re-scan the label from a different distance or angle.

Factors That May Impact Scanner Performance

The range of a scanner is dependent upon many outside influences including size of the barcode, quality of the barcode printing, material the barcode is printed on, condition of the scan lens (scratches) and angle of the scanner endcap relative to the barcode label. Any of these factors may result in having to re-scan the label from a different distance or angle.

Scanning Angle

Determine the optimum distance between the scanner and the barcodes to be read. Locate the scanner so the symbols are near the middle of the range. Center the barcode in the scan beam and scan perpendicular to the barcode label. If tilt is unavoidable, try to keep the tilt percentage between 3 and 15% off perpendicular.

Barcode Quality

Check the barcode for marks or physical damage e.g. ripped label, missing section, correct size for the scanner being used, etc.

In general, the bigger the barcode the further the distance from which it can be read. If the barcode is smaller than the specified size for the scanner being used, the distance, in almost all cases, will shrink.

Large barcodes can be scanned at the maximum distance. Hold the scanner closer to small barcodes (or with bars that are very close together).

Note: Do not position the scanner exactly perpendicular to the barcode being scanned. In this position, light can bounce back into the scanner's exit window, and possibly prevent a successful decode.

Barcode Symbology

Barcodes such as UPC codes and Code 128 are more complex than Code 39 and I 2 of 5. When attempting to get the maximum read distance possible, particularly with reflective labels, use Code 39. The use of Code 128 or other more complex symbologies will almost always result in a reduction in maximum read distance. LXE will not support scanner maximum distances when symbologies other than Code 39 are used.

Lens Damage

A scratched scanner window can impact read rates and distances. Scanner lenses should be inspected frequently, particularly if scanning quality or distances get worse over time.

Ambient Lighting

High ambient conditions, particularly outdoor environments, will produce enough light to somewhat "blind" the scanner. This will result in shorter read distances.

Temperature

While small deviations from room temperature will have no impact on scanner performance, severe conditions like those found in freezers will have a negative impact on both the distance scanners can read and the speed the read is acquired.

Batteries

Most non-LXE battery charger/analyzer manufacturers include a product user manual with their battery charger/analyzer or batteries. Use the information in this section as an additional source of information to the manufacturer's guide. **LXE strongly urges you to heed the cautions and warnings contained within the manufacturer's user guide.**

Reference Manual : E-INF-BATTERY[*Revision*] “Getting the Most From Your Batteries”

Battery Construction Types

LXE offers three types of main batteries or Main Battery packs:

- Nickel-Cadmium (NiCad) batteries.
- Nickel-Metal-Hydride (NiMH) batteries.
- Lithium-Ion (Li-Ion) batteries.

The internal backup batteries are either Lithium or NiCad, however, the backup battery (also known as a coin or button battery) is not user replaceable. The unit should be returned to LXE when the backup battery needs replacing.

NiCad Batteries

Named for the Nickel-Cadmium construction – Main Battery packs power the 2100 Series, 2280, 2285, and 2315 units.

Advantages:

- Considerable power
- Tolerance for wider range of operating temperatures
- Lasts for more charge/discharge cycles
- Shorter charge time

Disadvantages:

- “Memory effect” necessitates periodic discharge
- “Stand loss” can be significant
- Environmentally unfriendly due to toxic metals

NiMH Batteries

Named for the Nickel-Metal hydride construction – Main Battery packs power the 2280, 2285, and 2315 units.

Advantages:


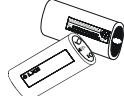

- More capacity than NiCad batteries
- No poisonous metals
- Less prone to “memory effect”

Disadvantages:

- Higher “stand loss” than NiCad batteries
- Longer charge time than NiCad batteries

Battery Types used in Legacy Equipment

These are the main battery types recommended for use with LXE hand-held terminals and computers:

LXE Product		Battery Type
2100 Series Terminal		800 mAh battery (NiCad).
2280 Series Terminal 2285 Series Terminal		600 mAh battery (NiCad) or 1000 mAh battery (NiMH).
2315 Terminal		850 mAh battery (NiMH) or 600 mAh battery (NiCad)

Estimated Battery Life

Refer to the following list of estimated battery life for the following batteries:

LXE Product	Battery Type and Rating	Minimum Battery Life (Before Replacement)
2100 Series Terminal	NiCad 800 mAh	500 charge/discharge cycles
2280 Series Terminal 2285 Series Terminal	NiCad 600 mAh NiMH 1000 mAh	500 charge/discharge cycles 300-500 charge/discharge cycles
2315 Terminal	NiMH 850 mAh NiCad 600 mAh	300-500 charge/discharge cycles

LXE Scanner Current Requirements

The barcode port on your terminal allows you to connect scanning devices to your terminal. The following table lists the current that the scanner uses while you scan:

Note: The more current a scanner requires while in use, the more it drains the life of your battery.

Scanner	Current
3000 Series	125 mA
5300 Series	135 mA
8500XLR	200 mA

Note: Scanners not in use require only a small amount of current.

Battery Replacement

Battery replacement instructions for LXE terminals and computers are fully documented in the operator or reference guides delivered with the units. Please refer to the manuals for complete instruction. If the computer supports “hot swapping” the main battery, the instructions follow.

In general, the battery replacement procedures consist of the following steps:

1. If the unit is powered on, save any work, and close running programs.
2. Turn the unit off.
3. Open the battery access panel or cover and remove the battery.
4. Insert an appropriate fully charged battery, aligning the positive and negative contacts on the battery with the metal contacts in the unit.
5. Close the battery access panel or cover.
6. Turn the unit on.

Place the used battery in the appropriate battery charger/analyzer.

Hot Swapping the Battery

If you are using a computer that supports “hot swapping” the main battery, the main battery may be replaced without powering the computer down. Refer to the computer’s operator or reference guide for complete details.

The general procedure for hot swapping the main battery consists of the following steps:

1. Save any work, and close running programs.
2. Place the computer in suspend or standby mode.
3. Open the battery access panel or cover and remove the battery. The computer enters critical suspend mode when the main battery is removed.
4. The backup battery maintains data such as time and date for at least 5 minutes but does not provide power for computer operation. If the hot swap is not completed before the backup battery is depleted or the off timer expires, the computer powers off and must be rebooted after the fresh main battery is installed.
5. Insert an appropriate fully charged battery, aligning the positive and negative contacts on the battery with the metal contacts in the unit.
6. Close the battery access panel or cover.
7. The computer then returns to the suspend state. Follow the appropriate action to return to the on-state and the computer is ready for use. There may be a slight delay if the radio needs to re-establish an RF connection.



Chapter 3 Daily Operation

This section groups together frequently used terminal parameters that the user can configure from the Hardware Setup Menu that is resident in the terminal.

Note that the menu options and screen displays are somewhat similar between terminal emulations though not exactly the same.

The network management workstation must first send the terminal emulation setup software to the terminal before the terminal can display the software options portion of the setup menus. See the “6200 Network Management Guide” for details on how to send the terminal emulation setup to the terminal.

For that reason, this chapter contains only hotkey and shortcuts. Please refer to the specific terminal emulation manual for complete TE Menu options when setting the terminal up for daily use:

Terminal Emulation Reference Manuals

- E-EQ-3270RG[Revision] “3270 Terminal Reference Guide”
- E-EQ-5250RG[Revision] “5250 Terminal Reference Guide”
- E-EQ-ANSIRG[Revision] “ANSI Terminal Reference Guide”
- E-EQ-LDSRG[Revision] “LDS I Terminal Reference Guide”

These manuals are located on the LXE Manuals CD and on the LXE ServicePass website.



When using the 2315 (19 or 29 key) terminal with a terminal emulator, it is important to refer to the “2315 Operator’s Guide” for accurate key sequences and functions specific to the 2315. The 2315 manuals are available on the LXE ServicePass website. Please contact your LXE representative for assistance, if needed, when downloading the 19 and 29 key 2315 manuals.

Hot Key Operation

The Hot Key Operation section explains how to select different terminal emulations, change RF channels, and switch to a backup network controller using LXE hot key sequences.

Note: If you are using a 2315, refer to the “2315 Operator Guide” for key sequences equivalent to the key sequences described in this section.

Note: Refer to Chapter 4, “Terminal Setup” of this guide for more details on setting these parameters.

Swapping Between Terminal Emulations

Hot Key Sequence

The hot key sequence [CTRL] [9] enables you to swap back and forth between two emulations on two separate hosts with one terminal. This hot key sequence has two modes of operation: cold boot and warm boot.

Cold Boot

When you use this hot key sequence in the cold boot mode, the current emulation is removed from RAM. The alternate emulation you choose is initialized (cold booted) and placed into RAM.

Warm Boot

When you use this hot key sequence in the warm boot mode, the current emulation is moved into the background of RAM and the alternate emulation is moved into the foreground of RAM. A limited number of RF messages sent to the background emulation are stacked. The terminal acknowledges (to the NC) the RF messages that are sent to the background emulation. The background emulation cannot respond to the host until that emulation returns to the foreground.

Before You Begin

Refer to Chapter 4, “Terminal Setup” in the terminal emulation reference guide for more details on setting the parameters to allow this hotkey to work as desired.

Procedure

Follow this procedure to swap between two terminal emulations:

1. Press the [CTRL] [9] key sequence to swap emulations. The terminal displays text that is similar to the following:

```
Press Y Key to Initiate New Application  
or SPACE Key to Return
```
2. Press the [Y] key to move the alternate terminal emulation into working RAM.

The terminal swaps emulations.

Changing RF Channels

This feature is valid for narrowband terminals only.

Hot Key Sequence

The hot key sequence [CTRL] [0] enables you to swap between two RF channels (for crystal radios) and select among four RF channels (for synthesized radios) while operating in the same terminal emulation. This feature is for narrowband terminals only. There is no limit to the number of times you can change the RF channels. This key sequence reprograms the radio only -- it does not establish a host connection. This frequency selection is lost when you power off.

Before You Begin

Refer to Chapter 4, “Terminal Setup” in the terminal emulation reference guide for more details on setting the parameters to allow this hotkey to work as desired.

Procedure

Follow this procedure to change RF channels:

1. Press the [CTRL] [0] key sequence.

If the terminal has a **crystal radio** installed, the terminal displays the following screen:

```
Current Channel is 2, Enter New Channel  
[1 or 2] or SPACE key to return
```

If the terminal has a **synthesized radio** installed, the terminal displays the following screen:

```
Current Channel is C, Enter New Channel  
[A - D] or SPACE key to return
```

2. Press the appropriate numeric key for a crystal radio (1 or 2) or alphabetic key for a synthesized radio (A - D).

The terminal automatically returns to the current process of your terminal emulation on the new channel.

Switching to a Backup NC

Hot Key Sequence

If your RFDC system is configured to do so, the hot key sequence [CTRL] [1] enables you to switch from a primary to a secondary NC (network controller). This feature provides a way for you to resume data processing if the primary NC fails.

The backup NC is not a hot backup. The session with the primary NC is lost when you switch to the secondary NC. Transactions that were in progress on the primary NC will be lost when you hot key to the secondary NC.

Examples

The usefulness of this feature depends on the physical architecture of your data collection system. In an ideal situation, the primary and secondary NCs draw power from separate sources and connect to separate host computers.

The following examples illustrate how this feature may or may not be useful:

Host went down.

If the secondary NC is attached to a different host, this feature will help; otherwise not.

Host to NC comm link went down.

If the primary and secondary NC do not share the same path to the host, this feature will help; otherwise they will both be affected by the common blockage.

Primary NC went down - no data flows through it.

Assuming the failure was not due to something the primary and secondary NCs shared in common (such as power or the Ethernet), this feature should help.

Communication with any or all RFUs lost.

This feature will not help unless a very specific LAN routing failure caused the primary NC to lose contact with the RFUs, leaving the secondary NC unaffected.

Communication between terminals and RFUs lost.

This feature will not help.

Procedure

Access Hardware Setup menu Y and enter the 4-digit hex RF IDs for the primary and secondary network controllers.

Refer to Chapter 4, “Terminal Setup” in the terminal emulation reference guide for more details on setting the parameters to allow this hotkey to work as desired.

Follow this procedure to switch to the backup NC:

1. Press the [CTRL] [1] key sequence.

One of the following screens will appear, depending on your current configuration:

```
CONFIGURED FOR
PRIMARY NC
SWITCH TO SECONDARY
NC AND RESTART?
Y/N
```

```
CONFIGURED FOR
SECONDARY NC
SWITCH TO PRIMARY
NC AND RESTART?
Y/N
```

2. When you press N, the screen will return to what appeared on it before you pressed [CTRL] [1].
3. When you press Y, the terminal will start the emulation you were in when you pressed [CTRL] [1]. Depending on your current configuration, one of the following messages will appear.

```
CONNECTING TO
PRIMARY NC
```

```
CONNECTING TO
SECONDARY NC
```

Keys and Key Sequences

This section describes the LXE Legacy RF terminal keys and key sequences for the 1200 and 2280 series terminals. For the keys and key sequences used in the 2315 terminal, see the “2315 Operator Guide”.

Key sequences require two keystrokes. To use an LXE key sequence, you must:

- press either the [ALT], [SHIFT], or [CTRL] key
- release it
- press the associated key

Note: If you are using a 2315, refer to the “2315 Operator Guide” for key sequences equivalent to the key sequences described in this section.

Unlock the Keyboard

If you press an entry key while the cursor is not in an entry field, the keyboard locks. Press the [RESET] key to restore the terminal to normal operation.

Function List and Legacy Key Sequences

IBM 3270



Refer to the “3270 Terminal Reference Guide” for complete definitions of the following key sequences.

Function Identifier	Legacy Key Sequence
ATTN	[ALT] [SEND]
BACKTAB	Tab Left [ALT] [Tab]
CLEAR	[CLR]
HOMEKEYA, HOMEKEYB	[ALT] [Up Arrow] [ALT] [Up Arrow]
CURSOR PAGE DOWN	[SHIFT] [Down Arrow] (in Help screen)
CURSOR PAGE UP	[SHIFT] [Up Arrow] (in Help screen)
DELETE	[SHIFT] [2]
E_INPUT	Erase Input Field [SHIFT] [CLR]
ENTER	[SEND]
ERASE	Erase End of Field [ALT] [CLR]
ERROR_RESET	[RESET]
HELP	[HELP]
INQUIRY or INQ	[ALT] [HELP]
INSERT	[SHIFT] [1]
LDUB/RDUB	Cursor Double Speed [ALT] [Left or Right Arrow]
NEW LINE KEY	[SHIFT] [Tab]

Function Identifier	Legacy Key Sequence
NEXT or TAB	[TAB] / [NEXT]
OFF	[ALT] [ON] 2200 Series only
ON	[ON] 2200 Series only
PA1	[SHIFT] [F9]
PA2	[CTRL] [F9]
PA3	[CTRL] [F10]
PF1 - PF10	F1 - F10
PF11 - PF20	[ALT] [F1] - [F10]
PF21 - PF24	[SHIFT] [F1] - [F4]
PRT_FLD	Print Field [CTRL] [P]
PRT_SCRN	Print Screen [CTRL] [S]
SEND	[SEND]
STATUS LINE TOGGLE	[CTRL] [SPACE]
SWAP EMULATION	[CTRL] [9]
SWITCH TO BACKUP NC	[CTRL] [1]
SYS_REQ	System Request [SHIFT] [F10]
WINDOW DOWN	[CTRL] [Down Arrow]
WINDOW HOME	[CTRL] Home or [ALT] Up Arrow
WINDOW LEFT	[CTRL] [Left Arrow]
WINDOW RIGHT	[CTRL] [Right Arrow]
WINDOW UP	[CTRL] [Up Arrow]

IBM 5250


Refer to the “5250 Terminal Reference Guide” for complete definitions of the following key sequences.

Function Identifier	Legacy Key Sequence
ATTN	[SHIFT] [SEND]
BACKTAB	[ALT] [NEXT] or [ALT] [TAB]
CANCEL	[RESET]
CHAR BACKSPACE	[SHIFT] [Left Arrow]
CLEAR	[CLR]
DELETE	[SHIFT] [2]
DUP	[SHIFT] [6]
ENTER	[SEND]
ERASE INPUT	[SHIFT] [CLR]
ERROR RESET or RESET	[RESET]

Function Identifier	Legacy Key Sequence
F1 - F10	[F1 - F10]
F11 - F20	[ALT] [F1 - F10]
F21 - F24	[SHIFT] [F1 - F4]
FIELD EXIT	[SHIFT] [0]
FIELD MINUS	[SHIFT] [8]
FIELD PLUS	[SHIFT] [7]
HELP	[HELP]
HEX INPUT	[SHIFT] [3]
HOMEKEY	[SHIFT] [Up Arrow]
INQUIRY	[ALT] [HELP]
INSERT	[SHIFT] [1]
NEW LINE KEY	[SHIFT] [Down Arrow]
NEXT or FIELD ADVANCE or TAB	[NEXT] or [TAB]
PRINT	[SHIFT] [9]
ROLLDOWN	[CTRL] [F10]
ROLLUP	[CTRL] [F9]
SEND or ENTERCATV	[SEND]
SYS_REQ	[CTRL] [SEND]
TEST REQ	[SHIFT] [TAB]
WINDOW DOWN	[CTRL] [Down Arrow]
WINDOW HOME KEY	[SHIFT] [Up Arrow]
WINDOW LEFT	[CTRL] [Left Arrow]
WINDOW RIGHT	[CTRL] [Right Arrow]
WINDOW UP	[CTRL] [Up Arrow]

ANSI



Refer to the “ANSI Terminal Reference Guide” for complete definitions of the following key sequences.

Function Identifier	Legacy Key Sequence
ANSWERBACK	[CTRL] [SEND]
BACKSPACE	[CTRL] [H]
BACKTAB	[ALT] [TAB]
CAPS LOCK	[CTRL] [SHIFT]
CHANGE RF CHANNEL	[CTRL] [0]
CLEAR FIELD	[CLR]
CLEAR SCREEN	[ALT] [CLR]

Function Identifier	Legacy Key Sequence	
COMPOSE CHARACTER	[RESET]	
CONTROL	[CTRL]	
CURSOR DOWN	[Down Arrow] ¹	
CURSOR LEFT	[Left Arrow] ¹	
CURSOR ORIGIN	[SHIFT] [Up Arrow]	
CURSOR RIGHT	[Right Arrow] ¹	
CURSOR UP	[Up Arrow] ¹	
DISPLAY -	[SHIFT] [TAB]	
ENTER	[SHIFT] [SEND]	
FUNCTION KEYS	F1 - F10 F11 - F20 F21 - F30 F31 - F40	[F1 - F10] [ALT] [F1 - F10] [SHIFT] [F1 - F10] [CTRL] [F1 - F10]
HELP	[HELP]	
INQUIRY OR INQ	[ALT] [HELP]	
LOCAL ESCAPE	[CTRL][4]	
OFF	[ALT] [ON] ²	
ON	[ON] ²	
SEND	[SEND]	
SETUP	[ALT] [Decimal Point]	
SWAP EMULATION	[CTRL] [9]	
SWITCH TO A BACKUP NC	[CTRL] [1]	
NEXT INPUT FIELD	[TAB] or [NEXT]	
UNLOCK KEYBOARD	[ALT] [RESET]	

LXE LDS



Refer to the “LDS I Terminal Reference Guide” for complete definitions of the following key sequences.

Key/Key Sequence	Description
AUXILIARY IN	[SHIFT] [4]
AUXILIARY OUT	[SHIFT] [5]
BACKTAB	ALT [NEXT] or ALT [TAB]
BARCODE ENABLE	[SHIFT] [3]
CHANGE RF CHANNEL	[CTRL] [0]
CHARACTER DELETE	[ALT] [Left Arrow]

¹ **Exception:** 1190, 1290, 52XX (modem) series terminals do not support cursor key continuous movement.

² 2200 Series Only.

Key/Key Sequence	Description
CHARACTER INSERT	[ALT] [Right Arrow]
CLEAR FIELD	[CLR]
CLEAR SCREEN CLS	[ALT] [CLR]
CURSOR DOWN	[Down Arrow]
CURSOR LEFT	[Left Arrow]
CURSOR RIGHT	[Right Arrow]
CURSOR UP	[Up Arrow]
ELECTROLUMINESCENT	[SHIFT] [6]
FORM RECALL	[SHIFT] [1]
FUNCTION KEYS	F1 - F10 : [F1 - F10] F11 - F20 : [ALT] [F1 - F10] F21 - F30 : [SHIFT] [F1 - F10] F31 - F40 : [CTRL] [F1 - F10]
LINE DELETE	[ALT] [Up Arrow]
LINE INSERT	[ALT] [Down Arrow]
NEXT FIELD, EXIT, CURSOR HOME	[NEXT] or [TAB]
OFF	[ALT] [ON] ³
ON	[ON] ³
TOGGLE BETWEEN RECEIVE AND COMPOSE BUFFERS	[RESET]
SEND DATA TO HOST	[SEND]
SETUP	[ALT] [Decimal Point]
STORED FORM LOAD	[SHIFT] [2]
SWAP EMULATION	[CTRL] [9]
SWITCH TO A BACKUP NC	[CTRL] [1]

³ 2200 Series Only.

Data Entry

The Data Entry section provides basic information to help you communicate with the host computer.

Power On and Connect With the Host

The 1200 terminals are powered on with the [ON/OFF] switch located on the rear of the terminal. The 2200 terminals are powered on with the [ON] key located on the keyboard. The 2315 is powered on by pressing the trigger located on the handgrip. Terminals with spread spectrum radios may take longer to power up due to radio synchronization delays.

How to power on and connect with the host computer

Power on the terminal. Screen displays similar to the following appear when your terminal powers up and successfully connects with the network controller:

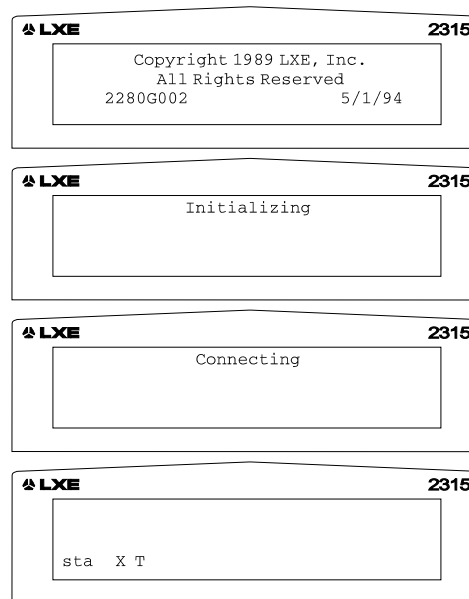


Figure 3-1 Sample Host Connection Screen Sequence

Unsuccessful Connection

If the terminal does not connect with the NC, the next screen announces the failure to connect and requests a power down.

Power down and try again. If the terminal continues to fail, contact your system manager.

Entering Messages

The LXE terminal accepts data entry from the keyboard, barcode scanner, and the auxiliary input port (RS-232).

Keyboard Data Entry

Once the terminal establishes communication with the NC, you can enter data with the terminal keyboard. The application program sends messages to the terminal that prompt you to make your next keyboard entry. For example, the application may prompt you to press an [F1] through [F24] key. You cannot enter data if the keyboard locks up, as indicated by an X in the status line.

Pressing a function key transmits a signal to the host. The host responds as specified by the application program.

Note: Do not program function keys that the host application is currently using. Doing so overrides previously specified functions by the host. Refer to the “Terminal Setup” chapter of the terminal emulation reference guide.

Barcode Data Entry

Most LXE terminals support an accessory barcode reading device for reading preprinted labels. You can intermix keyboard data entries with barcode data entries.

The standard barcode is Code 39 (C39). All legal Code 39 characters are accepted. In addition to Code 39, the standard terminal software also supports the following barcode formats:

- Code 128 (A, B, C)
- UPC-A
- UPC-E
- Codabar (CDB)
- Code 11 (C11)
- MSI Plessey
- Discrete 2 of 5 (C25)
- Interleaved 2 of 5 (I25)
- EAN-8
- EAN-13
- EAN-128

Refer to the “Terminal Setup” chapter in the terminal emulation reference guide to enable a barcode algorithm.

Note: The terminal accepts up to 23 data characters from a barcode reading device. You can set up the terminal to accept more than 23 characters from certain barcode scanners. Consult your scanner user's guide for details.

RS-232 Data Entry

The terminal accepts input from an RS-232 device connected to the RS-232 port of the terminal when the hardware has been setup to receive input from the port. The terminal processes data from the RS-232 port the same way it processes barcode data. The data is entered at the cursor position, and the data is subject to all of the barcode/RS-232 input menu parameters, such as truncate. You must activate the RS-232 input device before you can send data to the RS-232 port.

Window Movement

Window Movement Keys

Use these key sequences to manually move a display window around the virtual screen. The display window moves according to the type of window movement (full window movement or quadrant movement) enabled.

Key Sequence	Window Direction
[CTRL] [Up Arrow]	Up
[CTRL] [Right Arrow]	Right
[CTRL] [Left Arrow]	Left
[CTRL] [Down Arrow]	Down

Chapter 4 Tethered Scanners

Introduction

A scanner works by measuring the amount of light reflected from a series of black and white bars. The bars represent characters that are decoded by logic in the terminal or barcode device.

Caution:



The use of optical instruments with this product will increase eye hazard.

Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

You should be in an area that is relatively free of static electricity. Do not wear gloves while connecting or removing the scanning device.

You can damage the terminal if you attach a scanning device while the terminal is powered on.

Connecting the Scanner to the Terminal

LXE terminals connect to a scanning device through a Lemo connector.

1. Power off the terminal.
2. Attach the scanner cable (with male Lemo connector) to the female Lemo connector on the terminal.

Note: The red dot on the scanner connector should line up with the keyway on the terminal connector.

3. Power on the terminal.
4. Make sure that the terminal is prepared to receive barcode data through the setup parameters.

Tethered Scanners

Note: These tethered scanners are obsolete. Please contact your LXE representative to acquire equivalent replacement tethered scanners.

LS3603

LS3603	List #	Description	Country
8010LS3603STC08LUS	N/A	LS3603, 8' cable, LEMO	US
8010LS3603STC20LUS	N/A	LS3603, 20' cable, LEMO	US
8010LS3603STC08DUS	N/A	LS3603, 8' cable, 9-pin D	US
8010LS3603STC20DUS	N/A	LS3603, 20' cable, 9-pin D	US
8010LS3603STC08PUS	N/A	LS3603, 8' cable, PS/2	US
8010LS3603STC08LEC	N/A	LS3603, 8' cable, LEMO	EC
8010LS3603STC08DEC	N/A	LS3603, 8' cable, 9-pin D	EC
8010LS3603STC08PEC	N/A	LS3603, 8' cable, PS/2	EC

PSC Model

PSC Models	List #	Description	Country
8100QC200VLWW	8600L03	Quick 200 Verifier, visible laser	All
8101IP5312XXC07LWW	8500L56	5312IP, 7' cable, LEMO	US
8101IP5312MBC07LWW	8500L66	5312IP, marker beam, 7' cable, LEMO	US
8101IP5312XXC15LUS	8500L74	5312IP, 15' cable, LEMO	US
8101IP5312XXC07DWW	N/A	5312IP, 7' cable, 9-pin D	US
8101IP5312XXC15DUS	N/A	5312IP, 15' cable, 9-pin D	US
8102IP5322XXC07LWW	8500L63	5322IP, 7' cable, LEMO	US
8102IP5322XXC15LUS	N/A	5322IP, 15' cable, LEMO	US
8103IP5342XXC07LWW	8500L65	5342IP, 7' cable, LEMO	US
8103IP5342XXC15LUS	N/A	5342IP, 15' cable, LEMO	US
8104IP530052C07LWW	8500L71	5300-52IP, 7' cable, LEMO	US
8104IP530052C15LUS	N/A	5300-52IP, 15' cable, LEMO	US
8104IP530052C07DWW	N/A	5300-52IP, 7' cable, 9-pin D	US
8104IP530052C15DUS	N/A	5300-52IP, 15' cable, 9-pin D	US
8105IP530072C07LWW ⁴	8500L80	5300-72IP, 7' cable, LEMO	US
8105IP530072C15LUS	N/A	5300-72IP, 15' cable, LEMO	US
8105IP530072C07DWW ⁵	N/A	5300-72IP, 7' cable, 9-pin D	US

⁴ Class III laser not for sale in Germany.

⁵ Class III laser not for sale in Germany.

PSC Models	List #	Description	Country
8105IP530072C15DUS	N/A	5300-72IP,15' cable, 9-pin D	US
8109IP5362XXC07LWW	8500L64	5362IP, 7' cable, LEMO	US
8109IP5362XXC15LUS	N/A	5362IP,15' cable, LEMO	US
8106HP5380LRC05LWW	8500L79	5380 long-range back-of-hand scanner	US
8106HP5380STC05LWW	8500L53	5380 back-of-hand scanner	US
8107HP5381STC05LWW	8500L68	5381 scanner, no handle	US
8108HP5385STC05LWW	8500L69	5385 mini-gun type scanner	US
8101IS5312XXC07LWW	N/A	I-Safe 5312IP, 7' cable, LEMO	US
8104IS530052C07LWW	N/A	I-Safe 5300-52IP, 7' cable, LEMO	US
8105IS530072C07LWW ⁶	N/A	I-Safe 5300-72IP, 7' cable, LEMO	US

LS3203

LS3203	List #	Description	Country
8011LS3203ERC08LUS	N/A	LS3203 extended range, 8' cable, LEMO	US
8011LS3203ERC20LUS	N/A	LS3203 extended range, 20' cable, LEMO	US
8011LS3203ERC08DUS	N/A	LS3203 extended range, 8' cable, 9-pin D	US
8011LS3203ERC20DUS	N/A	LS3203 extended range, 20' cable, 9-pin D	US
8011LS3203ERC08PUS	N/A	LS3203 extended range, 8' cable, PS/2	US
8011LS3203ERC08LEC	N/A	LS3203 extended range, 8' cable, LEMO	EC
8011LS3203ERC08DEC	N/A	LS3203 extended range, 8' cable, 9-pin D	EC
8011LS3203ERC08PEC	N/A	LS3203 extended range, 8' cable, PS/2	EC

LS4800

LS4800	List #	Description	Country
8012LS4800SC08LUS	N/A	LS4800, 8' cable, LEMO	US
8012LS4800SC20LUS	N/A	LS4800, 20' cable, LEMO	US
8012LS4800SC08DUS	N/A	LS4800, 8' cable, 9-pin D	US
8012LS4800SC20DUS	N/A	LS4800, 20' cable, 9-pin D	US
8012LS4800SC08PUS	N/A	LS4800, 8' cable, PS/2	US
8012LS4800SC08LEC	N/A	LS4800, 8' cable, LEMO	EC
8012LS4800SC08DEC	N/A	LS4800, 8' cable, 9-pin D	EC
8012LS4800SC08PEC	N/A	LS4800, 8' cable, PS/2	EC

⁶ Class III laser not for sale in Germany.

Chapter 5 Technical Specifications

Network Controller and Radio Frequency Unit Technical Specifications

	Network Controllers	Radio Frequency Units	Comment
Microprocessor	32 bit	32 bit	
Capacity			
Number of Terminals	128		6210 has up to 32 terminals
Number of RFUs and NCs	4	60	6210 - No RFUs - has integrated radio
Number of Hosts	Multiple		Multiple TELNET and LAT hosts, multiple 3270 hosts through FEP, one 5250 or LDS host per NC
Frequencies			
450 - 470 MHz (Narrowband)	Yes	Yes	6220 Requires RFU
806 - 869 MHz (Narrowband)	Yes	Yes	6220 Requires RFU
902 - 928 MHz (Spread Spectrum)	Yes	Yes	6220 Requires RFU
(Non-U.S. radio certifications –number of countries)	Over 25	Over 25	6220 Requires RFU
RF Data Rate			
Kbps (Narrowband)	Yes	Yes	6220 Requires RFU
64Kbps (Spread Spectrum)	Yes	Yes	6220 Requires RFU
(Non-U.S. data rates vary by country) 4.8 - 64 Kbps	Yes	Yes	6220 Requires RFU
Interfaces			
TCP/IP Ethernet	Yes	---	
TCP/IP Token-Ring	Yes	---	
IBM 3270/SDLC/RS-232	Yes	---	
IBM 3270/SDLC/V.35	Yes	---	
IBM 3270/SNA/Token-Ring	Yes	---	Requires LXE SNA Gateway Option
IBM 5250/SDLC/RS-232	Yes	---	
IBM 5250/SDLC/V.35	Yes	---	
IBM 5250 Token-Ring	Yes	---	Requires LXE SNA Gateway Option
DEC LAT Ethernet and	Yes	---	

	Network Controllers	Radio Frequency Units	Comment
Token-Ring			
Async/RS-232 (LDS)	Yes	---	
RFU Interconnect			
Ethernet or Token-Ring	6220, 6230	Yes	
Temperature			
32°F - 122°F (0°C - 50°C)	Yes	Yes	
Low Temp Option			
-22°F(-30 C)	---	6281	
Universal Input			
110-240 VAC, 50-60 Hz (nominal)	Yes	Yes	
Designed to meet			
CE, CSA, (CB report available)	Yes	Yes	
Dimensions			
Weight	6 lbs (2.7 kg)	6 lbs (2.7 kg)	6281 weight - 15 lbs
Height	2.5" (63 mm)	2.5" (63 mm)	6281 height - 22.02", width - 13.30", depth - 4.07"
Width	11.7" (297 mm)	11.7" (297 mm)	6281 height - 22.02", width - 13.30", depth - 4.07"
Depth	14.5" (368 mm)	14.5" (368 mm)	6281 height - 22.02", width - 13.30", depth - 4.07"

Terminals

The 1280 Vehicle-Mounted Terminal

Power Input	110 – 240 VAC, 50 – 60 Hz (nominal) 1.5 Ampere Max 12 – 72 VDC
RF Power Output	1 Watt Spread Spectrum 2 Watts Narrowband
Temperature	-10°C – 50°C (14°F – 122°F)
Humidity	0 – 95%, non-condensing
Environment	Dust/Water resistant
Height	7.25"; 18.41cm
Width	13.25"; 33.65cm
Depth	4.06"; 10.31cm
Weight	14 lb; 6.36kg

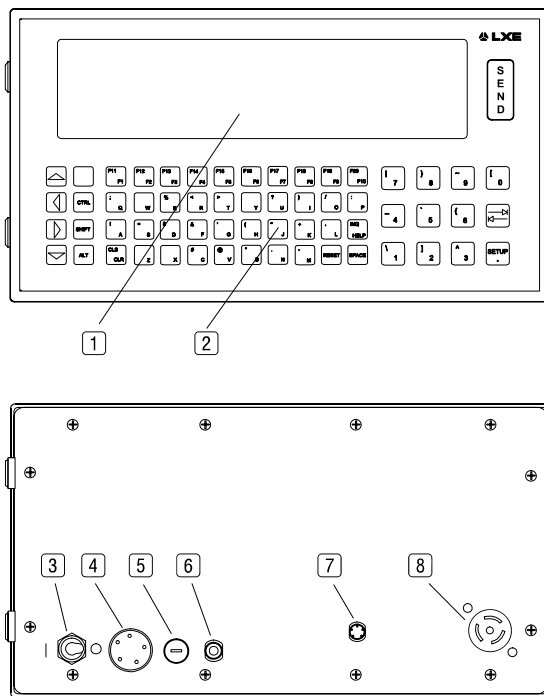


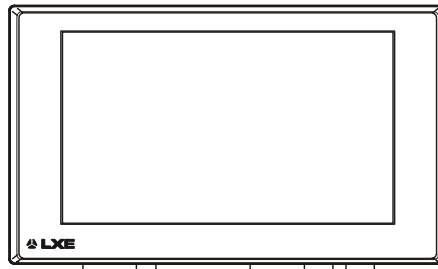
Figure 5-1 1280 Vehicle-Mounted Terminal

- | | | | |
|---|---------------|---|---------------|
| 1 | Display | 5 | Fuse Holder |
| 2 | Keyboard | 6 | Barcode Input |
| 3 | On/Off Switch | 7 | RS-232 I/O |
| 4 | Power Input | 8 | Beeper |

The 1290 Vehicle-Mounted Terminal

Power Input	110 – 240 VAC, 50 – 60 Hz (nominal) 7 Ampere Max 12 – 72 VDC
RF Power Output	1 Watt Spread Spectrum 2 Watts Narrowband
Temperature	-10°C– 50°C(14°F – 122°F)
Humidity	0–95%, non-condensing
Environment	Dust/Water resistant

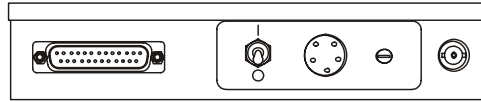
Display



Display:

Height	7.12"; 18.08cm
Width	10.5"; 26.67cm
Depth	2.0"; 5.08cm
Weight	3.25 lb; 1.48kg

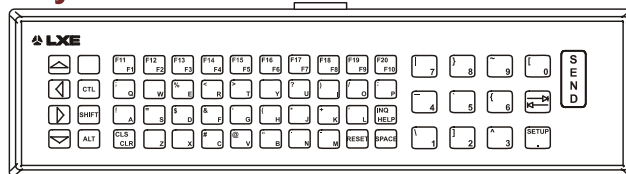
CPU



CPU:

Height	2.5"; 6.35cm
Width	13.4"; 34.04cm
Depth	11.25"; 28.57cm
Weight	11.3 lb; 5.13kg

Keyboard



Keyboard:

Height	2.0"; 5.08cm
Width	14.25"; 36.2cm
Depth	4.38"; 11.13cm
Weight	2.44 lb; 1.11kg

Figure 5-2 The 1290 Vehicle-Mounted Terminal

The 2280 Hand-Held Terminal

Power Input	7.2 VDC Nickel-Cadmium
RF Power Output	1 Watt Spread Spectrum / 2 Watts Narrowband
Temperature	-10°C – 50°C (14°F – 122°F)
Humidity	0 – 95%, non-condensing
Environment	Dust/Water resistant
Height	4.63"; 11.76cm
Width	8.56"; 21.74cm
Depth	1.60"; 4.06cm
Weight	29 oz; .82 kg

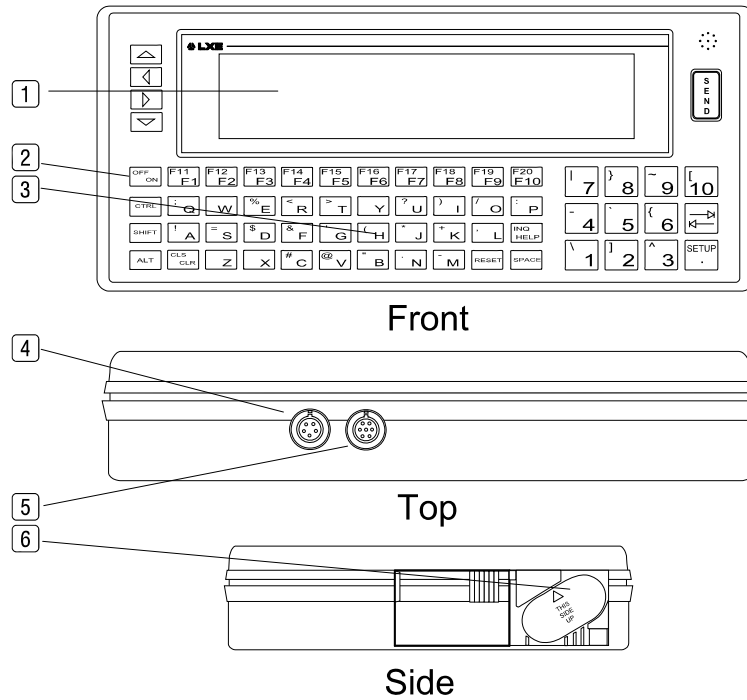


Figure 5-3 2280 Hand-Held Terminal

- | | | | |
|---|------------|---|---------------|
| 1 | Display | 4 | Barcode Input |
| 2 | Keyboard | 5 | RS-232 I/O |
| 3 | On/Off Key | 6 | Battery |

The 2285 Hand-Held Terminal

Power Input	7.2 VDC Nickel-Cadmium
RF Power Output	1 Watt Spread Spectrum 2 Watts Narrowband
Temperature	-10°C– 50°C (14°F – 122°F)
Humidity	0 – 90%, non-condensing
Environment	Dust/Water resistant
Height	9.40"; 23.88cm
Width	3.65"; 9.27cm
Depth	1.60"; 4.06cm
Weight	26 oz; .74 kg

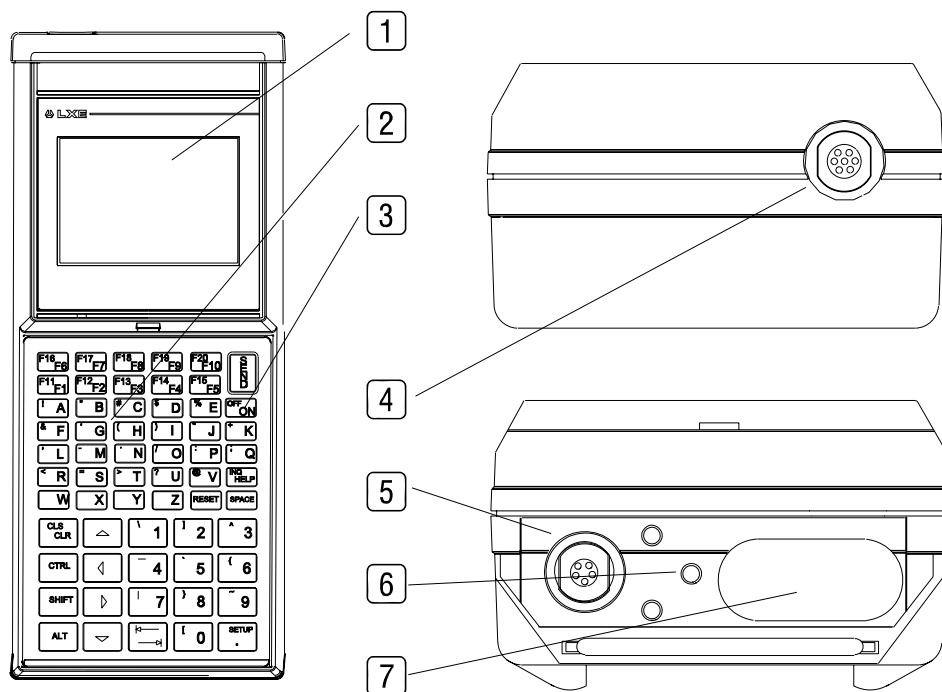


Figure 5-4 2285 Hand-Held Terminal

- | | | | |
|---|---------------|---|----------------|
| 1 | Display | 5 | RS-232 I/O |
| 2 | Keyboard | 6 | Charger Inputs |
| 3 | On/Off Key | 7 | Battery |
| 4 | Barcode Input | | |

The 2285/CSE Hand-Held Terminal

Power Input	7.2 VDC Nickel-Cadmium
RF Power Output	1 Watt Spread Spectrum 2 Watts Narrowband
Temperature	-10°C– 50°C (14°F – 122°F)
Humidity	0 – 95%, non-condensing
Environment	Dust/Water resistant
Height	10.5"; 26.7cm
Width	3.65"; 9.3cm
Depth	7.60"; 19.3cm
Weight	36 oz; .94kg

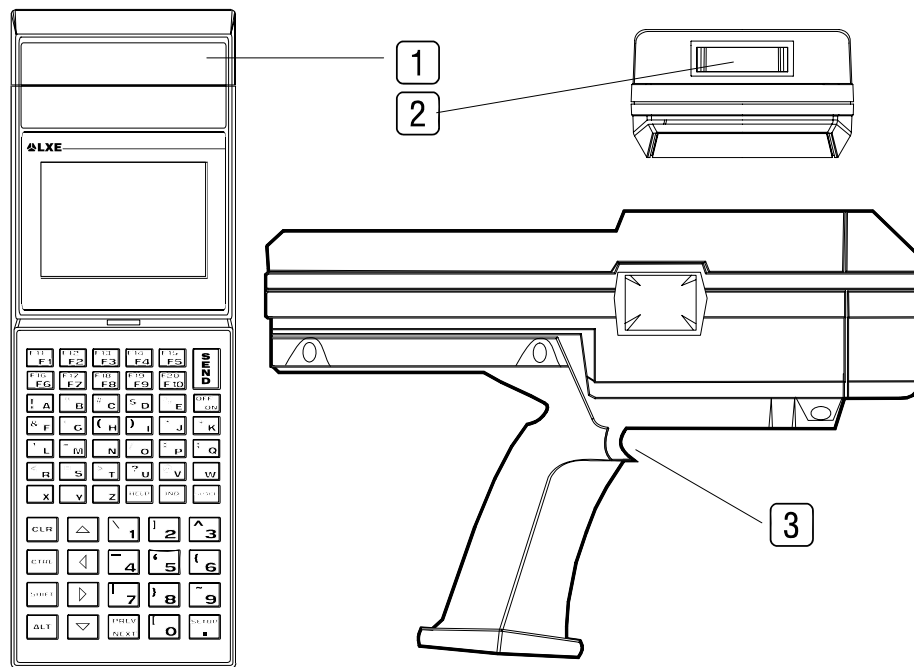


Figure 5-5 2285/CSE Hand-Held Terminal

- 1 Compact Scanner Engine
- 2 Laser Access Window
- 3 CSE Activation Trigger

The 2285/IST Hand-Held Terminal

Power Input	7.2 VDC Nickel-Cadmium
RF Power Output	1 Watt Spread Spectrum 2 Watts Narrowband
Temperature	-10°C– 50°C (14°F – 122°F)
Humidity	0 – 95%, non-condensing
Environment	Dust/Water resistant
Height	12.0"; 30.48cm
Width	3.65"; 9.3cm
Depth	1.60"; 4.06cm
Weight	33 oz; .94kg

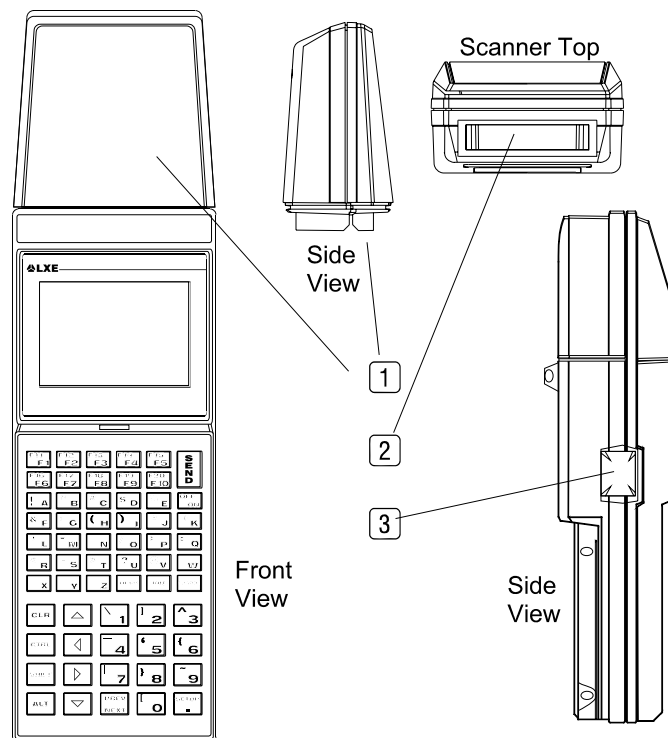


Figure 5-6 2285/IST Hand-Held Terminal

- 1 Integrated Scanner
- 2 Laser Access Window
- 3 IST Activation Switch (1 on each side)

The 2315 Hand-Held Terminal

Power Input	7.2 VDC
RF Power Output	1 Watt - Spread Spectrum / 2 Watts - Narrowband
Temperature	-20°C to 50°C (-4°F to 122°F)
Humidity	90%, non-condensing
Height	221mm, 8.7"
Width	114mm, 4.5"
Depth	155mm, 6.1"
Weight	.96kg, 34 oz
Bar Code Firmware	Code 39, Interleaved 2 of 5, Discrete 2 of 5, UPC-A, UPC-E, Code 128, Plessey, Code 11, EAN-8 and EAN-13
Security	Three Password levels
Rechargeable Battery Pack	7.2V 850mAh NiMH
Scanner Decode Range	Standard: 86.36mm to .86 meters / 3.4" to 34"
	Long Range: .20 to 1.65 meters / 8" to 65"

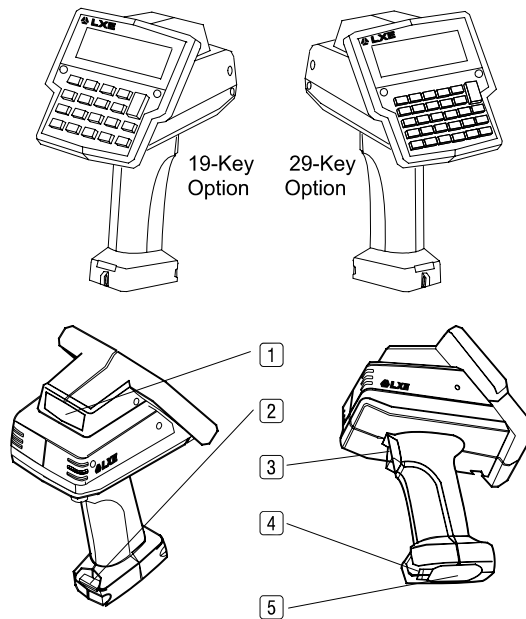


Figure 5-7 2315 Hand-Held Terminal

- 1 Laser Access Window
- 2 Battery Locking Slide
- 3 Trigger
- 4 RS-232 Port
- 5 Battery Compartment

Barcode Port Pinout

Pinouts for 1280,1290, 2280, 2285 Terminals

Model 1280, 1290, 2280, and 2285 LXE terminals feature the barcode port illustrated below:

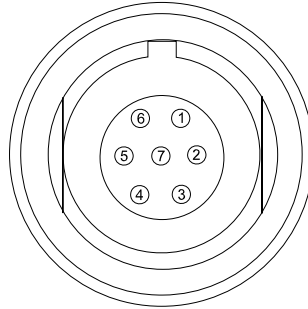


Figure 5-8 Barcode Port Pinouts

Note: This is the external view of the port, as seen from the outside of the terminal housing.

Pin	Signal Name	Pin	Signal Name
1	BCDATA	5	+5/LED
2	SCAN	6	GND
3	TRIG_2	7	+5 to +12 Volts
4	BC-EN		

Keypads – All Terminals



Figure 5-9 1280 QWERTY Keypad



Figure 5-10 1290 QWERTY Keypad



Figure 5-11 2280 QWERTY Keypad



Figure 5-12 2285 Keypad



Figure 5-13 2285/CSE Keypad



Figure 5-14 2285/IST Keypad



Figure 5-15 2315 19 Key Keypad



Figure 5-16 2315 29 Key Keypad

Appendix A Regulatory Notices and Safety Information

FCC Information:

This device complies with FCC Rules, part 15. Operation is subject to the following conditions:

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

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the 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 the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warning: Changes or modifications to this device not expressly approved by LXE, Inc., could void the user's authority to operate this equipment.

EMC Directive Requirements:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada:

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

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouiller du Canada. Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique édictés par le ministère des Communications du Canada.

Notice:

The long term characteristics or the possible physiological effects of radio frequency electromagnetic fields have not been investigated by UL.

RF Safety Notice:



Caution: This device is intended to transmit RF energy. For protection against RF exposure to humans and in accordance with FCC rules and Industry Canada rules, this transmitter should be installed such that a minimum separation distance of at least 20 cm (7.8 in.) is maintained between the antenna and the general population. This device is not to be co-located with other transmitters.

Approvals:

Product	EMI / EMC Standards	Safety Standards
12xx 2280	FCC Part 15 Subpart B, Class A EN 55022 : 1998 Class A EN 55024 : 1998	EN 60950-1 : 1992 + Amendments A1..A4 UL 1950 CSA C22.2 No. 950 IEC 950
2285 2286 2315	FCC Part 15 Subpart B, Class A EN 55022 : 1998 Class A EN 55024 : 1998	EN 60950-1 : 1992 + Amendments A1..A4 UL 1950 CSA C22.2 No. 950 CDRH: 21 CFR 1040.10 and 1040.11 EN 60825-1 IEC 825-1 IEC 950

Transceiver	RF Standards	Notes
47 xxLxx 4400L20 LXE 900 MHz SS radio family	FCC Part 15, Subpart C FCC Part 2 IC-RSS 210	Unlicensed Operation Requires License for Outdoor Use
46xxLxx(S) LXE 430-470 MHz NB radio family	FCC Part 15, Subpart C FCC Part 2 ETS 300 113 IC-RSS 210	Licensed Operation Licensed Operation

R&TTE Directive Requirements (Applies only to Equipment operated within the EU/EFTA)**Information to User**

A label on the exterior of the device should resemble one of the labels shown below (the label contains the LXE part number of the installed radio card). The labels shown below and affixed to the device, identify where the device may be used and where its use is restricted. Use of a device is prohibited in countries not listed below or otherwise identified by the label. (May or may not include the 0560 Notified Body No.)



Permitted for use in: Austria, Belgium, Denmark, Finland, Germany, Greece, Hungary, Iceland, Italy, Ireland, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom



Permitted for use in France.

Declaration of Conformity – 430-470 MHz Narrowband Radio



DECLARATION OF CONFORMITY

according to

The R&TTE Directive; 1999/5/EC
the Low Voltage Directive; 73/23/EEC
the EMC Directive; 89/336/EEC
and the Marking Directive; 93/68/EEC

Type of Equipment:	430-470 MHz, portable/mobile transceiver
Brand Name or Trademark:	LXE
Type Designation:	46xxLxx(S)
Manufacturer:	LXE Inc.
Address:	125 Technology Parkway Norcross, GA 30092, USA

The following harmonized European Standards, technical specifications, or other normative documents, have been applied:

EMI / EMC Standards:

EN 55022 : 1998 Limits and methods of measurement of radio disturbance characteristics of information technology equipment

EN 300 279 : 1999 Electromagnetic compatibility and Radio spectrum Matters (ERM); - Electromagnetic compatibility (EMC) standard for Private land Mobile Radio (PMR) and ancillary equipment (speech and/or non-speech)

Radio Frequency Standards:

EN 300 113 : 1999 Radio Equipment and Systems (RES); Land mobile service; Technical characteristics and test conditions for non-speech and combined analogue speech/non-speech equipment with an internal or external antenna connector intended for the transmission of data.

Safety Standards:

EN60950:2000 Safety of information technology equipment, including electrical business equipment

The product carries the CE Mark:



We, LXE Inc., declare that the equipment specified above complies with all Essential Health and Safety Requirements of the above Directives and Standards, as amended.

Date of issue: February 11, 2002

D.C. Massey
Lead Regulatory Engineer



Lithium Battery Safety Statement



Caution:

Lithium battery inside. Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by battery manufacturer. (US)

Attention:

Contient une pile de lithium. Risque d'explosion dans le cas où la pile ne serait pas correctement remplacée. Remplacer uniquement avec une pile semblable ou équivalente au type de pile recommandé par le fabricant. (FR)

Forsigtig:

Indeholder lithiumbatterier. Risiko for eksplosion, hvis batteriet udskiftes forkert. Må kun udskiftes med samme eller tilsvarende type, som anbefalet af fabrikanten. (DK)

Varoitus:

Tämä tuote käyttää laservaloa. Skannerissa on jokin seuraavista tarroista. Lue Huomio-kohta. (FI)

Vorsicht:

Enthält Lithium-Batterie. Bei unsachgemäßem Ersatz besteht Explosionsgefahr. Nur durch gleichen oder vom Hersteller empfohlenen Typ ersetzen. (DE)

Attenzione:

Batteria al litio. Pericolo di esplosione qualora la batteria venga sostituita in maniera scorretta. Sostituire solo con lo stesso tipo o equivalente consigliato per il fabbricante. (IT)

Atenção:

Contém pilha de lítio. Há perigo de explosão no caso de uma substituição incorreta. Substitua somente pelo mesmo tipo, ou equivalente, recomendado pelo fabricante. (PT)

Varning:

Innehåller litiumbatteri. Fara för explosion om batteriet är felaktigt placerat eller av fel typ. Använd endast samma eller motsvarande typ batterier rekommenderade av tillverkaren. (SE)

Advarsel:

Innmontert Lithium batteri. Eksplosjonsfare ved feil montering av batteri. Benytt kun batteri anbefalt av produsent. (NO)

Cuidado:

Pila de litio adentro. Peligro de explosión si la pila se reemplaza incorrectamente. Reemplace solamente con el mismo tipo o equivalente recomendado por el fabricante. (ES)

Oppassen:

Bevat Lithium-batterij. Incorrrecte plaatsing van batterij kan leiden tot explosiegevaar. Alleen vervangen door hetzelfde of door fabrikant aanbevolen gelijkwaardig type. (NL)

Updated 11/09/2000



Lithium Battery Safety Statement



<p>Προσοχή: Υπάρχει μπαταρία από λίθιο εσωτερικά. Υπάρχει κίνδυνος έκρηξης εάν η μπαταρία αντικατασταθεί με λανθασμένο τρόπο. Αντικαταστήστε μόνο με τον ίδιο ή ισοδύναμο τύπο που συνιστάται από τον κατασκευαστή. (GR)</p>	<p>주의: 리튬 배터리 내부. 배터리가 잘못 설치되었을 경우 폭발의 위험이 있습니다. 동일한 배터리, 또는 배터리 제조업체가 권장하는 배터리로 교체하십시오. (KR)</p>
<p>注意: リチウム電池が入っています。間違った種類の電池を使用すると、破裂する恐れがあります。同じ電池、または電池製造元が推奨する同等の電池を使用してください。 (JP)</p>	<p>小心: 内装锂电池。如电池更换不当，则有发生爆炸的危险。只能用电池制造商推荐的相同或同等电池进行更换。 (CN)</p>
<p>Dikkat: İçinde lityum bataryası bulunur. Bataryanın yanlış değiştirilmesi patlama tehlikesi yaratır. Aynısıyla veya üreticinin önerdiği eşdeğer tipte değiştirin. (TR)</p>	

Legend:

Chinese	CN	Italian	IT
Danish	DK	Japanese	JP
Dutch	NL	Korean	KR
English	US	Norwegian	NO
Finnish	FI	Portuguese	PT
French	FR	Spanish	ES
German	DE	Swedish	SE
Greek	GR	Turkish	TR



Precautions When Using Charger/Analyzers and Batteries



Before you plug in and operate any LXE Charger or Analyzer, please read and understand this section. The following advice is given in the interest of safety and reliability. LXE strongly urges you to heed the cautions and warnings contained within the manufacturer's user guide.

Use For Correct Battery Type Only

Your LXE Charger or Analyzer must only be used to charge, analyze and condition NiCad, NiMH or Li-Ion batteries it was designed for. Any attempt to charge other types of batteries may cause an explosive reaction, fire or chemical burns. Please do not assume that the physical form of another battery qualifies it for use in the LXE Charger or Analyzer. Please read the battery label.

Hot or Cold Batteries

NiMH batteries cannot be repaired once they are damaged by over-temperature and under-temperature charging. Therefore you should bring all NiMH batteries to room temperature before charging or maintaining that battery. The System 90 Universal Charger temperature circuits will prevent the charge if you install a battery that is too hot or cold. In this instance an error code will appear. (E01 or Battery Fault LED).

Li-Ion batteries are also sensitive to temperature while charging. The Multi-Charger designed for the Li-ion batteries monitors the battery's temperature during the charge process. Best results are obtained if the battery is allowed to reach the proper room temperature before inserting in the Multi-Charger. The battery may take a much longer time to reach the proper temperature installed in the charger and can cause the charger to discontinue the charging process if the battery temperature remains out of the safe range for an extended period of time.

Battery Handling and Disposal

Never dispose of a battery in a fire. This may cause an explosion. Do not replace individual cells in a battery. The imbalance in the battery pack will result in poor performance.

Old or damaged batteries should be disposed of promptly and properly. The best way to dispose of used batteries is to recycle them. The battery recycling facilities recover the Nickel or Lithium from old batteries to manufacture new batteries.

Electrolyte Burns

Be careful when handling NiCad, NiMH or Li-Ion batteries. If a battery is broken or shows signs of leakage do not attempt to charge it. Dispose of it!




Nickel-based cells contain a chemical solution that burns skin, eyes, etc. Leakage from cells is the only possible way for such exposure to occur. In this event, rinse the affected area thoroughly with water. If the solution contacts the eyes, get immediate medical attention.

Electrical Burns




NiCad, NiMH and Li-Ion batteries are capable of delivering high currents when accidentally shorted. Accidental shorting can occur when contact is made with jewelry, metal surfaces, conductive tools, etc., making the objects very hot. Never place a charged battery in a pocket or case with keys, coins, or other metal objects.

Laser Beam Exposure / Label Location Cautions and Warnings - Translations




German

<p>Warnung:</p> 	<p><i>Nicht direkt in den Fensterbereich oder auf eine Reflektion des Laserstrahls blicken, während der Laser scannt. Der Laserstrahl kann Ihr Sehvermögen schädigen.</i></p>
<p>Vorsicht:</p> 	<p><i>Abweichungen von der hierin vorgeschriebenen Verwendung der Bedienungseinheit, Einstellungen oder Anwendungsverfahren kann zu gefährlicher Strahlenbelastung führen.</i></p>
<p>Warnetikette:</p> 	<p><i>Dieses Produkt verwendet Laserlicht. Eines der folgenden Etiketten befindet sich auf dem Scanner. Bitte lesen Sie den Gefahrenhinweis.</i></p>



Spanish

<p>Advertencia:</p> 	<p><i>No mire directamente al área/ventana o al haz láserico mientras está explorando. La exposición a esa luz láser puede causar daños en la visión.</i></p>
<p>Precaución:</p> 	<p><i>Use otros controles, reajustes, o procedimientos que no puedan causar exposiciones peligrosas a las radiaciones.</i></p>
<p>Etiquetas de Precaución:</p> 	<p><i>Este producto usa luz de láser. Las etiquetas se proveen en la máquina exploradora. Por favor, lea detenidamente la explicación para las precauciones.</i></p>

French

<p>Mise en garde:</p> 	<p><i>Ne pas regarder directement au travers du cadran de visualisation ni le reflet du rayon laser lorsque celui-ci est en train d'opérer le scannage. Une exposition au rayon laser peut causer des troubles oculaires.</i></p>
<p>Avertissement:</p> 	<p><i>L'utilisation de commandes, réglages ou l'exécution de procédures autres que celles spécifiées ci-après peut entraîner une exposition dangereuse aux radiations.</i></p>
<p>Étiquettes d'avertissement:</p> 	<p><i>Ce produit utilise un rayon laser. L'une des étiquettes suivantes est apposée sur le scanner. Veuillez lire l'avertissement qu'elle contient.</i></p>

Italian

<p>Attenzione:</p> 	<p><i>Non guardare direttamente nell'area di finestra ed evitare di guardare qualunque riflessione del raggio laser, mentre il questo e' in funzione durante la scansione. La vista puo' essere seriamente danneggiata dall'esposizione diretta al raggio laser.</i></p>
<p>Precauzioni:</p> 	<p><i>L'utilizzo di questo prodotto con controlli, regolazioni e/o procedure diverse da quelle qui illustrate puo' causare l'esposizione a pericolose radiazioni.</i></p>

Etichette di pericolo: *Questo prodotto utilizza luce laser. Una delle etichette seguenti c'è ubicata sullo scanner. Si raccomanda di leggere con attenzione le avvertenze riportate.*



Swedish

Varning: *Titta ej direkt in i fönstret eller på en reflektion av laserstrålen, medan lasern läser av. Din syn kan skadas om ögonen exponeras för laserstrålen.*



Varning: *Man riskerar att utsättas för farlig strålning, om andra kontroller och justeringar används, eller om arbetsuppgifterna utförs på annat sätt, än vad som anges här.*



Varningsetiketter: *Denna produkt använder laserljus. En av de nedanstående etiketterna sitter på scannern. Var god läs varningstexten.*



Portuguese

Advertência: *Não olhe diretamente na janela nem na reflexão do raio de laser enquanto ele estiver realizando a exploração. A exposição ao raio de laser pode prejudicar a visão.*



Aviso: *O uso de controles, ajustes ou a execução de outros procedimentos não especificados aqui podem resultar em exposição radioativa perigosa.*



Rótulos de aviso: *Este produto usa luz de laser. O scanner contém um dos seguintes avisos. Favor ler o Aviso.*



Finnish

Varoitus: *Älä katso suoraan ruutuun, sen välittömään läheisyyteen äläkä lasersäteeseen, kun laser on skannaamassa. Lasersäteelle altistuminen voi vahingoittaa näköäsi.*



Huomio: *Muiden kuin tässä lueteltujen kontrollien, säätöjen tai suoritusjärjestysten käyttö voi altistaa vaaralliselle säteilylle.*



Huomiotarrat: *Tämä laite käyttää laservaloa. Yksi oheisista tarroista on tarkoitettu skanneriin. Muista lukea Huomio-osa.*

