

XPort® Direct™+



XPort Direct+ Integration Guide/Data Sheet

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One or both of the following patents apply: 4,972,470 or 6,881,096. Other patents pending. XPort Direct+ with its patented technology is a trademark of Lantronix.

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Disclaimer and Revisions

Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Note: *This product has been designed to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in an industrial installation. This equipment generates, uses, and can radiate radio frequency energy. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this guide, may cause harmful interference to radio communications.*

Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.

Note: *With the purchase of XPort Direct+, the OEM agrees to an OEM firmware license agreement that grants the OEM a non-exclusive, royalty-free firmware license to use and distribute the binary firmware image provided, only to the extent necessary to use the XPort Direct+ hardware. For further details, please see the XPort Direct+ OEM firmware license agreement, see page 3.*

Date	Rev.	Comments
10/07	A	Initial release
12/07	B	Edited warranty page

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1: Introduction

About the Integration Guide

This guide provides the information needed by engineers to integrate the **XPort Direct™+** device networking gateway into their product.

Additional Documentation

The following documentation is available on the product CD and the Lantronix Web site (www.lantronix.com)

<i>XPort Direct+ User Guide</i>	Provides information needed to configure, use, and update the XPort Direct+ firmware.
<i>XPort Direct+ Quick Start</i>	Provides instructions for getting your unit up and running.

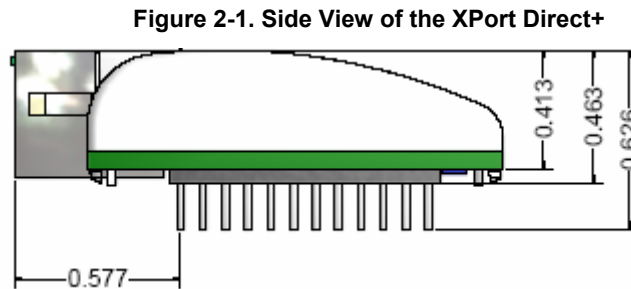
2: Description and Specifications

The XPort Direct+ embedded device server is a complete network-enabling solution enclosed within a compact, integrated package. This miniature serial-to-Ethernet converter enables original equipment manufacturers (OEMs) to quickly and easily go to market with networking and web page-serving capabilities built into their products.

The XPort Direct+

The XPort Direct+ contains Lantronix's own DSTni-EX CPU, which has 256 KB zero wait-state SRAM, 16 Kbytes of boot ROM, and an integrated 10/100 Ethernet MAC/PHY.

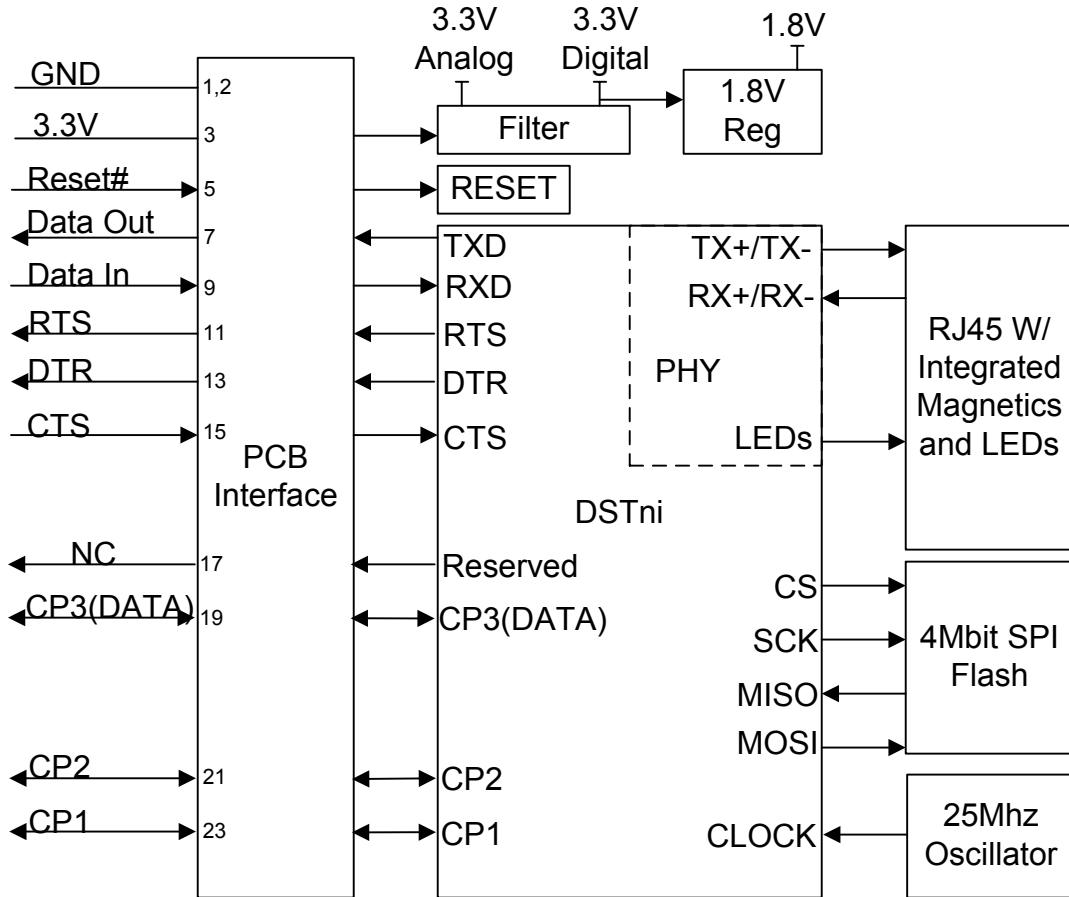
The following diagram shows the side view of the XPort Direct+ with measurements in inches.



XPort Direct+ Block Diagram

The following drawing is a block diagram of the XPort Direct+ showing the relationships of the components.

Figure 2-2. XPort Direct+ Block Diagram



PCB Interface

The XPort Direct+ has a serial port compatible with data rates up to 921 Kbaud. The serial interface pins include +3.3V, ground, and reset. The serial signals usually connect to an internal device, such as the UART port of the host device's microcontroller. For applications requiring an external cable running with RS-232 or RS422/485 voltage levels, the XPort Direct+ must interface to a serial transceiver chip.

Table 2-1. PCB Interface Signals

Signal Name	Direct Pin #	Primary Function
GND	1,2	Circuit ground
3.3V	3	+3.3V power in
Reset#	5	External reset in
Data Out	7	Serial data out (driven by DSTni's built-in UART)
Data In	9	Serial data in (read by DSTni's built-in UART)
RTS	11	Flow control out: RTS (Request to Send) output driven by DSTni's built-in UART for connection to CTS of attached device. RTS is used as transmit enable in RS485 mode.
DTR	13	Modem control: DTR (Data Terminal Ready) output driven by DSTni's built-in UART for connection to DCD of attached device.
CTS	15	Flow control in: CTS (Clear to Send) input read by DSTni's built-in UART for connection to RTS of attached device.
NC	17	Reserved
CP3 (DATA)	19	General Purpose IO pin
CP2	21	General Purpose IO pin
CP1	23	General Purpose IO Pin
Chassis	24	Chassis Ground Pin
NC	10,22	No Connect Pins
Reserved	4,6,8,12, 14,16,18, 20	Reserved Pins, Do not connect

The Ethernet interface magnetics, RJ45 connector, and Ethernet status LEDs are all integrated in the XPort Direct+.

Note: For RS232 connections, see *Demo Board Schematic* on page 11. For RS485 connections, see *Figure 2-3* below.

Figure 2-3. RTS Connection for RS485 Mode

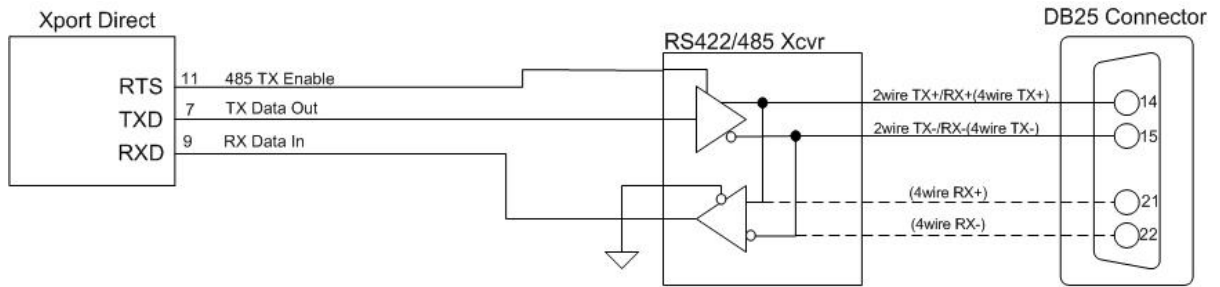


Table 2-2. Ethernet Interface Signals (Industry Standards)

Signal Name	DIR	Contact	Primary Function
TX+	Out	1	Differential Ethernet transmit data +
TX-	Out	2	Differential Ethernet transmit data -
RX+	In	3	Differential Ethernet receive data +
RX-	In	6	Differential Ethernet receive data -
Not used		4	Terminated
Not used		5	Terminated
Not used		7	Terminated
Not Used		8	Terminated
SHIELD			Chassis ground

LEDs

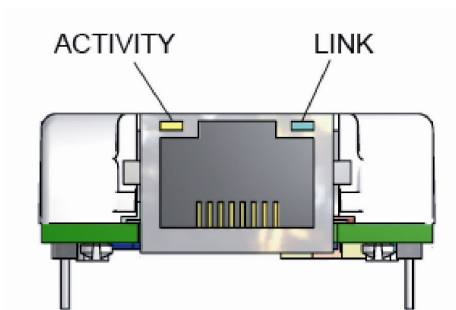
The XPort Direct+ contains the following LEDs:

- ◆ Link (Green LED)
- ◆ Activity (Yellow LED)

Table 2-3. LEDs

Link LED		Activity LED	
Status	Meaning	Status	Meaning
Off	No link	Off	No Activity
Green	Link established	Blink yellow	Activity

Figure 2-4. XPort Direct+ LEDs



Dimensions

The following drawings show the dimensions of the XPort Direct+ (in inches):

Figure 2-5. Front View

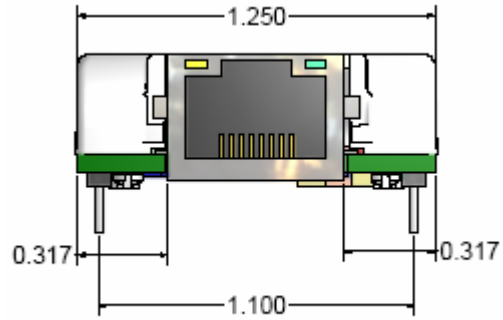


Figure 2-6. Bottom View

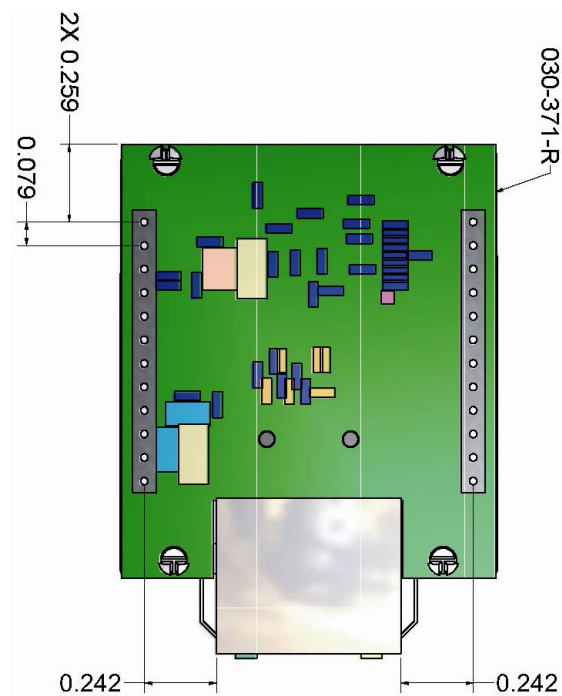
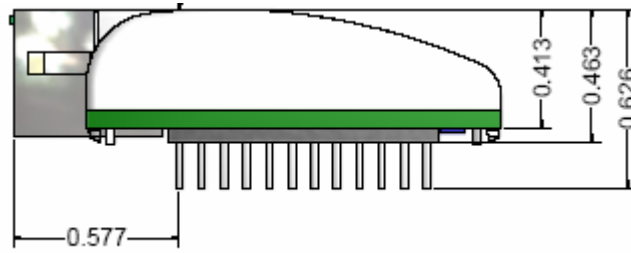


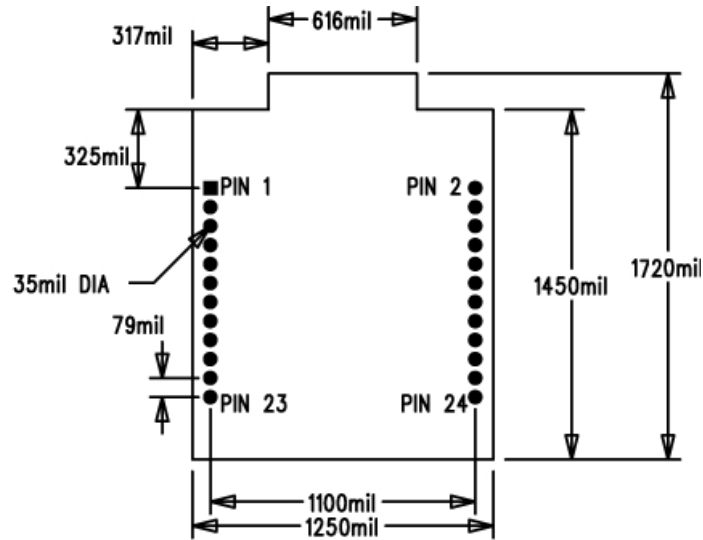
Figure 2-7. Side View



Recommended PCB Layout

The following drawing shows the hole pattern and mounting dimensions for the XPort Direct+.

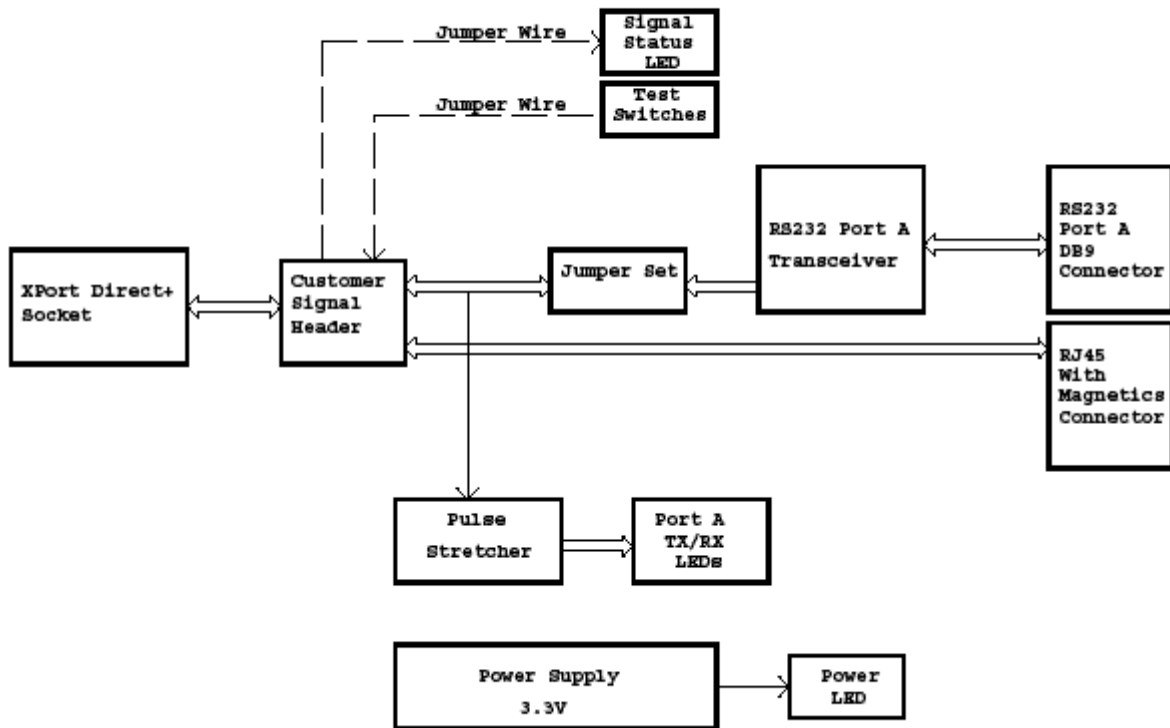
Figure 2-8. PCB Layout (Top View)

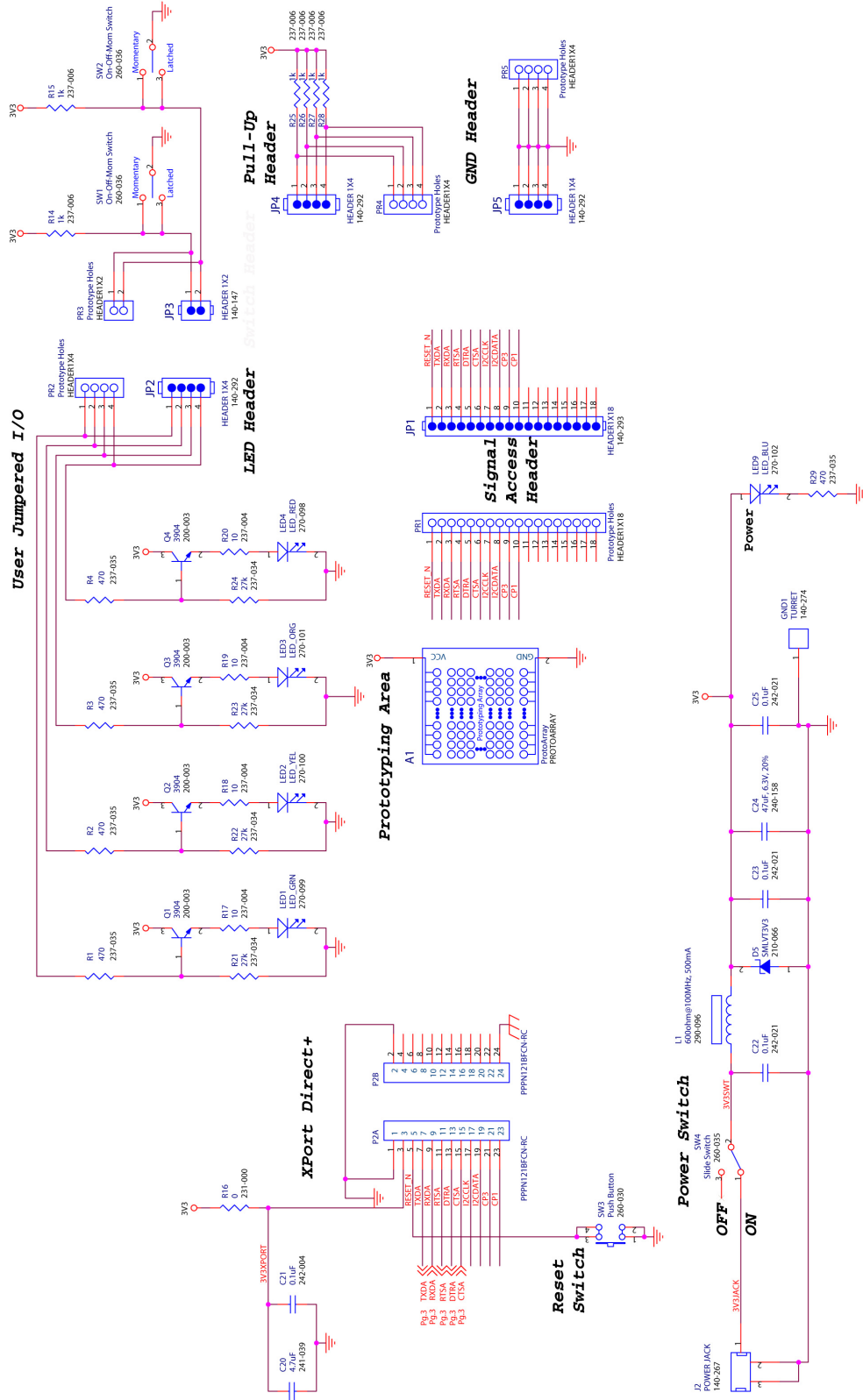


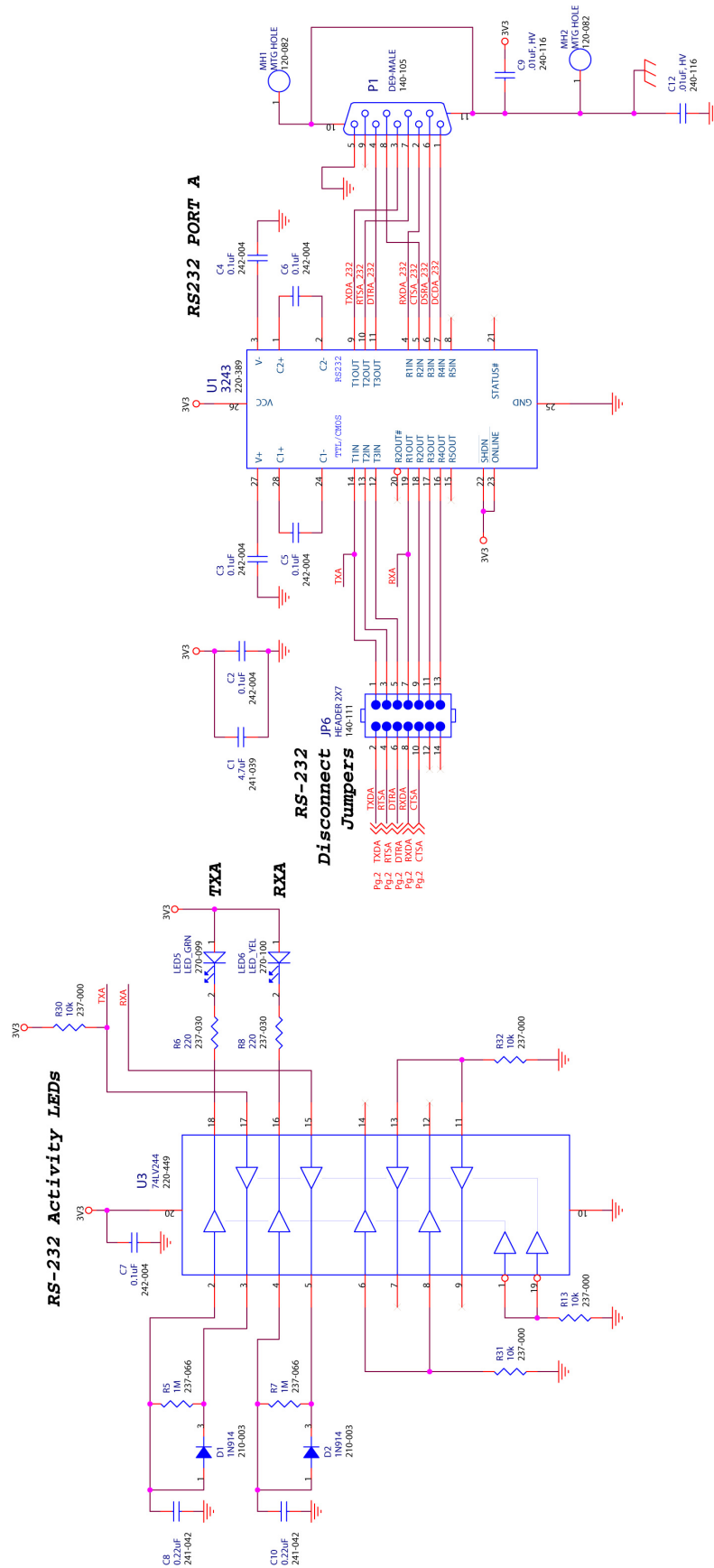
Demo Board Schematics

Figure 2-9. XPort Direct+ Demo Board

XPort Direct+ Demo Board







Technical Specifications

Table 2-4. Technical Specifications

Category	Description
CPU, Memory	Lantronix DSTni-EX 186 CPU, 256 KB zero wait state SRAM, 4 Mbit SPI Flash, 16 KB boot ROM operating at up to 88 Mhz
Firmware	Upgradeable via TFTP and serial port
Reset Circuit	Reset is initiated when the power input drops below 2.6V or when pin Reset# is asserted low. Reset is extended for ~200ms after power returns or Reset# is de-asserted.
Serial Interface	CMOS (Asynchronous) 3.3V-level signals Rate is software selectable: 300 bps to 921Kbps
Serial Line Formats	Data bits: 7 or 8 Stop bits: 1 or 2 Parity: odd, even, none
Data Rates	300 bps to 921 Kbps
Modem Control	DTR, modem_control_in
Flow Control	XON/XOFF (software), CTS/RTS (hardware), None
Network Interface	RJ45 Ethernet 10Base-T or 100Base-TX (auto-sensing)
Compatibility	Ethernet: Version 2.0/IEEE 802.3 (electrical), Ethernet II frame type
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, DHCP, BOOTP, TFTP, Auto IP, HTTP, SMTP, Email
LEDs	10Base-T and 100Base-TX Link Activity, Full/half duplex
Management	Serial login, Telnet login
Security	Password protection, locking features
Weight	15.5g (0.55 oz)
Material	Plastic shell
Temperature	-40°C to 85°C (-40°F to 185°F) operating temperature -40°C to 85°C (-40°F to 185°F) storage temperature
Shock/Vibration	Non-operational shock: 500 g's Non-operational vibration: 20 g's
Warranty	One year limited warranty
Included Software	Windows™ 98/NT/2000/XP-based Device Installer configuration software and Windows™-based Com Port Redirector
EMI Compliance	Radiated and conducted emissions - complies with Class A limits of EN 55022:1998 Direct & Indirect ESD - complies with EN55024:1998 RF Electromagnetic Field Immunity - complies with EN55024:1998 Electrical Fast Transient/Burst Immunity - complies with EN55024:1998 Power Frequency Magnetic Field Immunity - complies with EN55024:1998 RF Common Mode Conducted Susceptibility - complies with EN55024:1998

DC Characteristics for Serial, PIO, and Power Interface

Symbol	Parameter	Min	Nominal	Max	Units
V _{CC}	Supply voltage (typical 3.3) (+/-5%)	3.14	3.3	3.46	V
V _{IL}	Low Level Input Voltage	0		0.8	V
V _{IH}	High Level Input Voltage	2.0		5.5	V
V _{OL}	Low Level Output Voltage			0.4	V
V _{OH}	High Level Output Voltage	2.4			V
I _{CC}	Supply Current (idle)@ 48 MHz		119		mA
I _{CC}	Supply Current (100BASE-T activity)@ 48 MHz		224		mA

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V _{OH}	High Level Output Voltage	2.4			V
I _{CC}	Supply Current (idle)@ 48 MHz		119		mA
I _{CC}	Supply Current (100BASE-T activity)@ 48 MHz		224		mA
I _{CC}	Supply Current (idle)@ 88 MHz		233		mA
I _{CC}	Supply Current (100BASE-T activity)@ 88 MHz		262		mA

A: Compliance

(According to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:

Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA

Declares that the following product:

Product Name Model: XPort Direct+

Conforms to the following standards or other normative documents:

Safety:

UL 60950-1

CAN/CSA-C22.2 No. 60950-1-03

Electromagnetic Emissions:

The XPort Direct+ has been tested to the following standards: VCCI, FCC, IC, CE and AS-NZS (30 MHz. – 1000 MHz), Class A Radiated Emissions.

Note: *This product has been pre-tested to meet FCC Class A Radiated Emissions. However, because the XPort Direct+ will be embedded into the OEM's device, the OEM must get certification for the end product.*

Manufacturer's Contact:

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Fax: 949-453-3995

B: Warranty

For details on the Lantronix warranty replacement policy, go to our web site at www.lantronix.com/support/warranty.