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Date	Rev.	Comments
1/07	A	Initial Release
5/07	B	Added demo board schematic and information about RTS connection for RS485 mode.
7/07	C	Added power requirements.
12/07	D	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](http://www.lantronix.com))

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

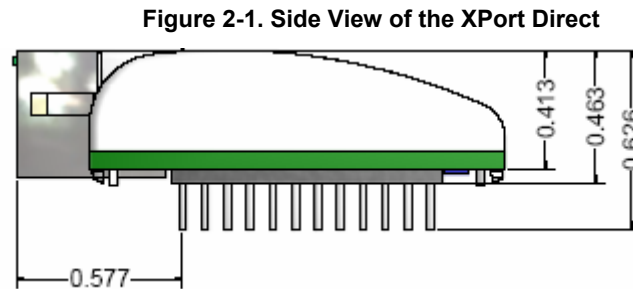
## 2: Description and Specifications

The XPort Direct embedded gateway server is a complete network-enabling solution enclosed within an RJ45 package. This miniature serial-to-Ethernet converter empowers 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.

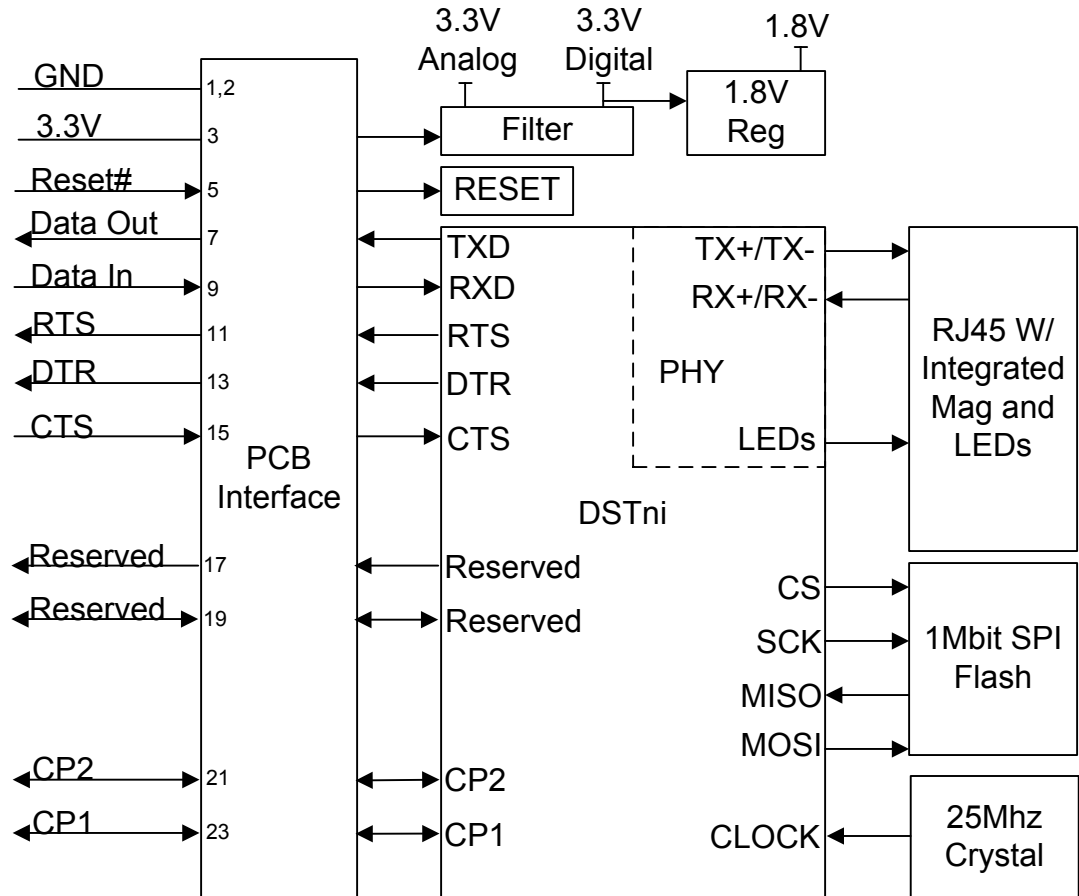




## XPort Direct Block Diagram

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 230 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.
I2CCLK	17	Reserved
I2C DATA	19	Reserved
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 14. For RS485 connections, see *Figure 2-3* below.

Figure 2-3. RTS Connection for RS485 Mode

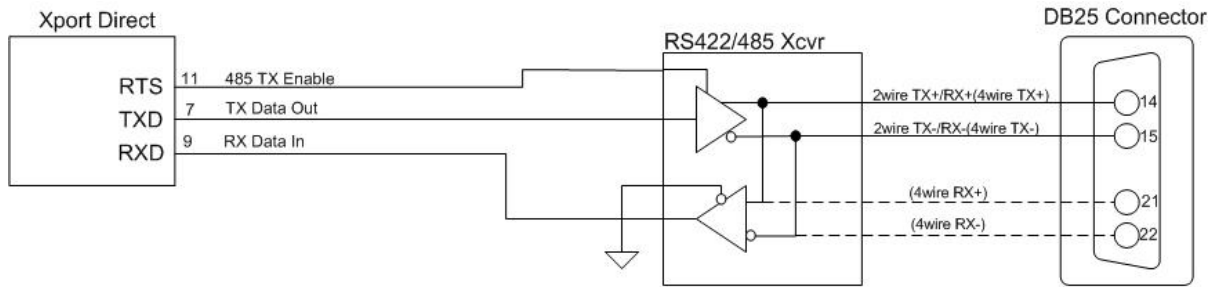


Table 2-2. Ethernet Interface Signals (Industry Standards)

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

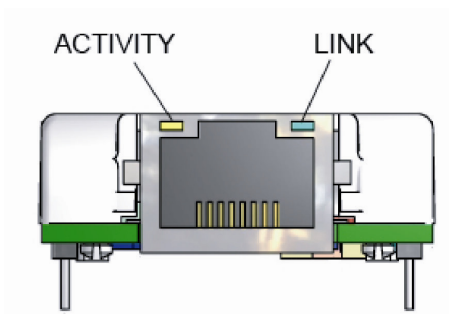
The XPort Direct contains the following LEDs:

- ◆ 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

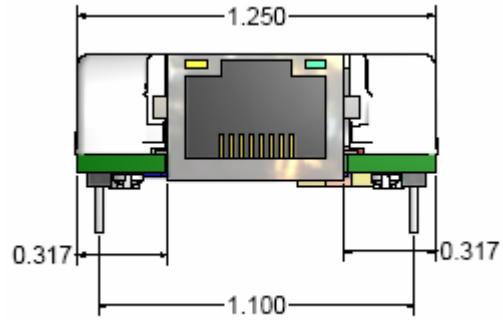


Figure 2-6. Bottom View

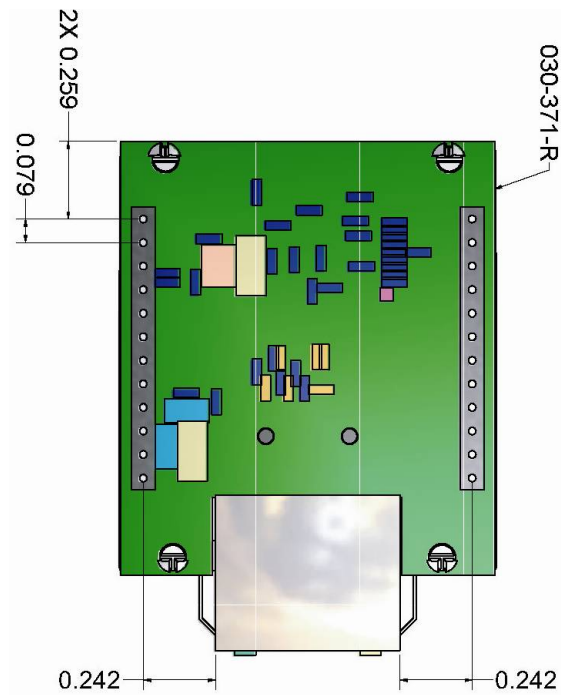
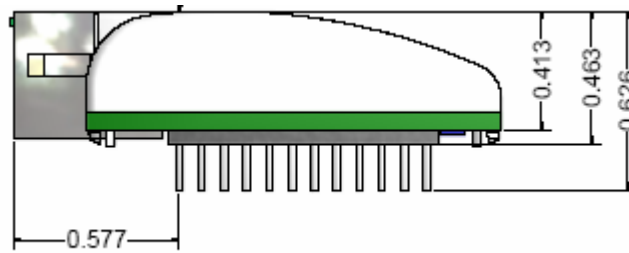


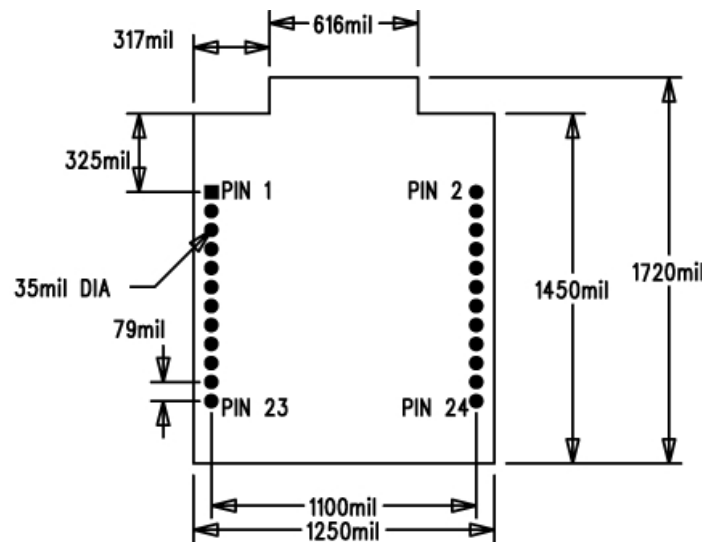
Figure 2-7. Side View



## Recommended PCB Layout

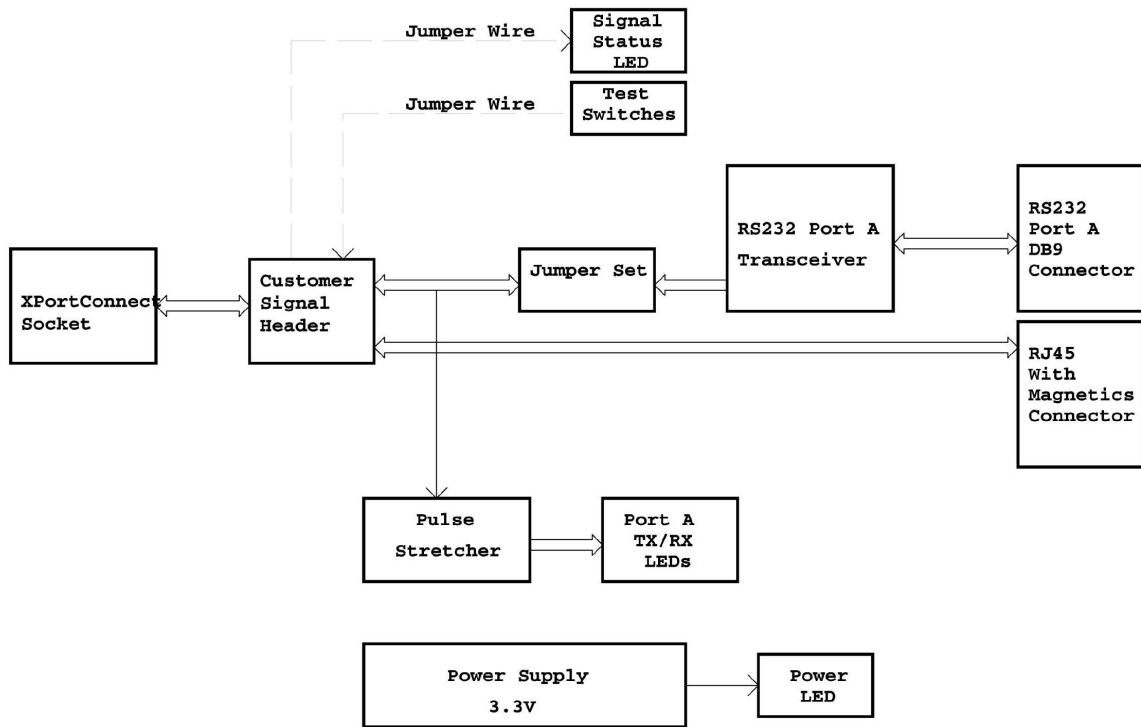
The following drawing shows the hole pattern and mounting dimensions for the XPort Direct.

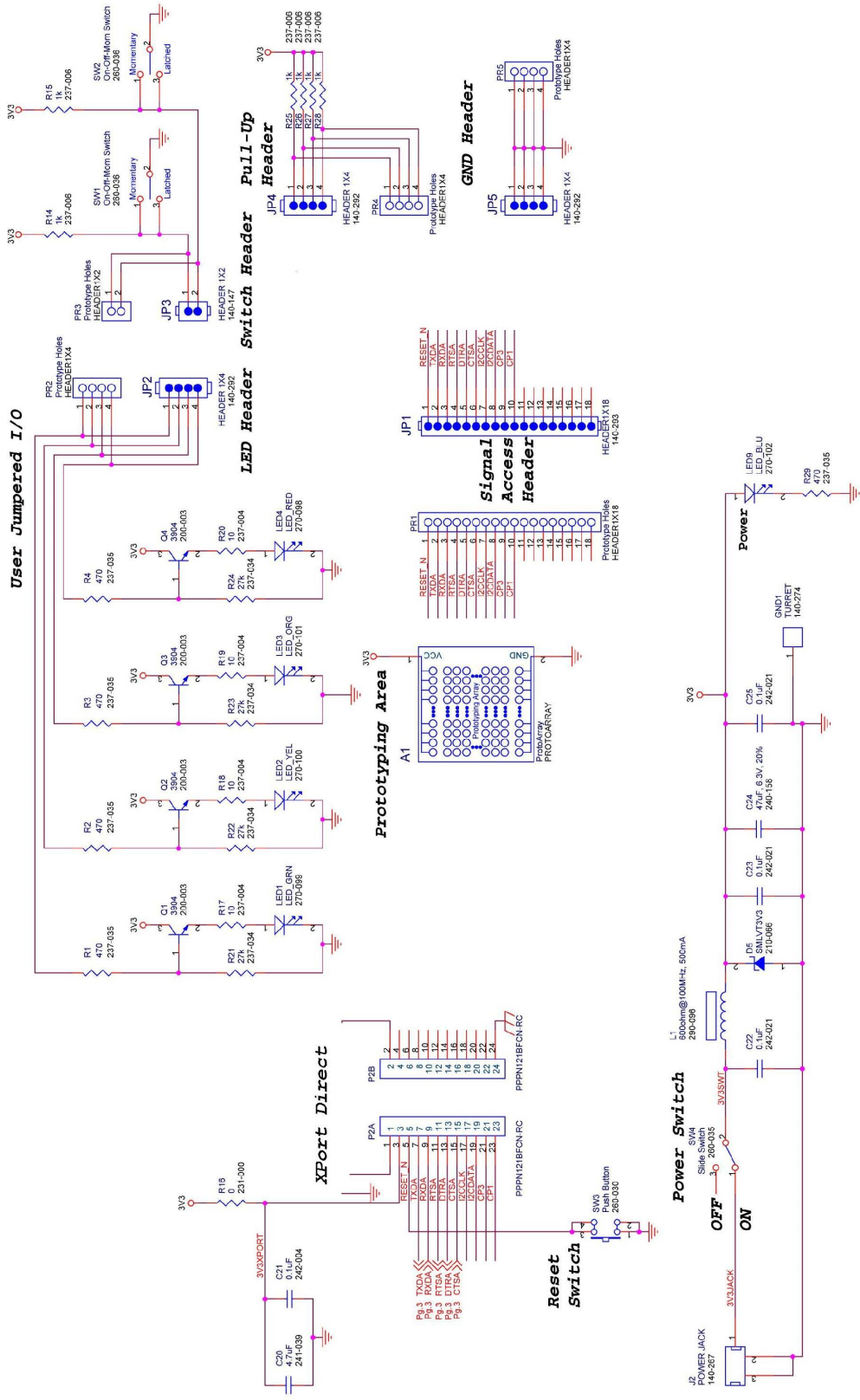
Figure 2-8. PCB Layout (Top View)



## Demo Board Schematics

Figure 2-9. XPort Direct Demo Board









## Technical Specifications

**Table 2-4. Technical Specifications**

Category	Description
CPU, Memory	Lantronix DSTni-EX 186 CPU, 256 KB zero wait state SRAM, 1Mbit SPI Flash, 16 KB boot ROM operating at 48 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 230400 bps
Serial Line Formats	Data bits: 7 or 8 Stop bits: 1 or 2 Parity: odd, even, none
Data Rates	300 bps to 230400 bps
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
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	0°C to +70°C (32°F to 140°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 <sub>CC</sub>	Supply voltage (typical 3.3) (+/-5%)	3.14	3.3	3.46	V
V <sub>IL</sub>	Low Level Input Voltage	0		0.8	V
V <sub>IH</sub>	High Level Input Voltage	2.0		5.5	V
V <sub>OL</sub>	Low Level Output Voltage			0.4	V
V <sub>OH</sub>	High Level Output Voltage	2.4			V
I <sub>CC</sub>	Supply Current (idle)@ 48 MHz		119		mA
I <sub>CC</sub>	Supply Current (100BASE-T activity)@ 48 MHz		224		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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## ***B: Warranty***

For details on the Lantronix warranty replacement policy, go to our web site at [www.lantronix.com/support/warranty](http://www.lantronix.com/support/warranty).