LANTRONIX®



MatchPort™ AR ARCHITECT

MatchPort AR™ Integration Guide

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Disclaimer and Revisions

Operation of this equipment in a residential area is likely to cause interference to other devices, 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 B digital device pursuant to Part 15 of FCC and EN55022:1998 Rules when properly enclosed and grounded. These limits are designed to provide reasonable protection against radio interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this guide, may cause 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 MatchPort AR, 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 MatchPort AR hardware. For further details, please see the MatchPort AR OEM firmware license agreement.*

Date	Rev.	Comments
June	A	Initial Release

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1: Introduction

About the Integration Guide

This guide provides the information needed to integrate the MatchPort AR™ device server within another product. The intended audiences are the engineers responsible for integrating the MatchPort AR into their product.

Notes:

- *The MatchPort AR Demo Kit provides hardware and firmware for customer evaluation. The complete kit includes a Module Universal Demo Kit (Lantronix PN MP10010NMK-01) and a MatchPort AR sample (Lantronix PN FP300200S-01)*
- *For developing application firmware on MatchPort AR, there is a MatchPort Plus Development board with a Background Debug Mode (BDM) connector. Please contact Lantronix for more details.*

Additional Documentation

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

MatchPort AR User Guide	Provides information needed to configure, use, and update the MatchPort AR firmware.
MatchPort AR Command Reference	Lists and explains MatchPort AR command line and XML commands.
MatchPort AR Quick Start	Briefly explains the basics to get the MatchPort AR up and running.
MatchPort Demonstration Kit Quick Start Guide	Provides information needed to configure, use, and update the MatchPort demonstration kit.

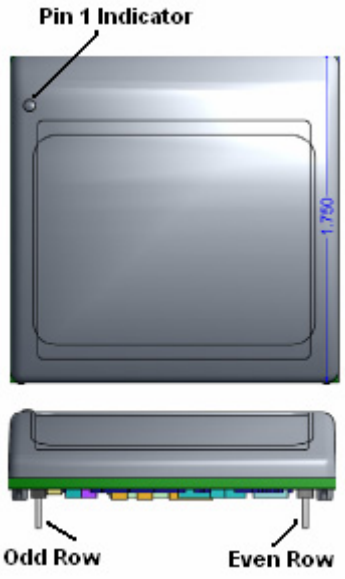
2: Description and Specifications

The MatchPort AR embedded device server is a complete network-enabling solution on a 1.75"x1.75" PCB. This miniature device server empowers original equipment manufacturers (OEMs) to go to market quickly and easily with networking and web page serving capabilities built into their products.

The MatchPort AR has the following features:

- **Power Supply:** Regulated 3.3V input required. There is a step-down converter to 1.5 volts for the processor core. All voltages have LC filtering to minimize noises and emissions.
- **Controller:** A Lantronix DSTni-FX 32-bit microprocessor, running at 166 MHz internal bus and 83 MHz external bus.
- **Memory:** 4 MB Flash and 8 MB SDRAM, and can be expanded. Please contact your sales representative if you need higher memory densities.
- **Ethernet:** 10/100 Base TX with auto-negotiation and HP auto-MDIX. On-board 100-ohm terminations included. Users just need an RJ45 jack and 1:1 Ethernet magnetics with a minimal numbers of discrete components.
- **Integrated Ethernet LED Drivers:** For connections to Ethernet Link and Activities LEDs.
- **Serial Ports:** Two full RS232 serial ports with all hardware handshaking signals. Baud rates can be standard or customized up to 230 Kbps. RS232/422/RS485 functionalities can also be configured on Serial Port 1.
- **Configurable IO Pins (CPs):** Up to 7 pins are configurable as general purpose I/Os if no DTR or DCD is used on serial ports.
- **Interface Signals:** 3.3V-level interface signals.
- **Temperature Range:** Operates over an extended temperature range.

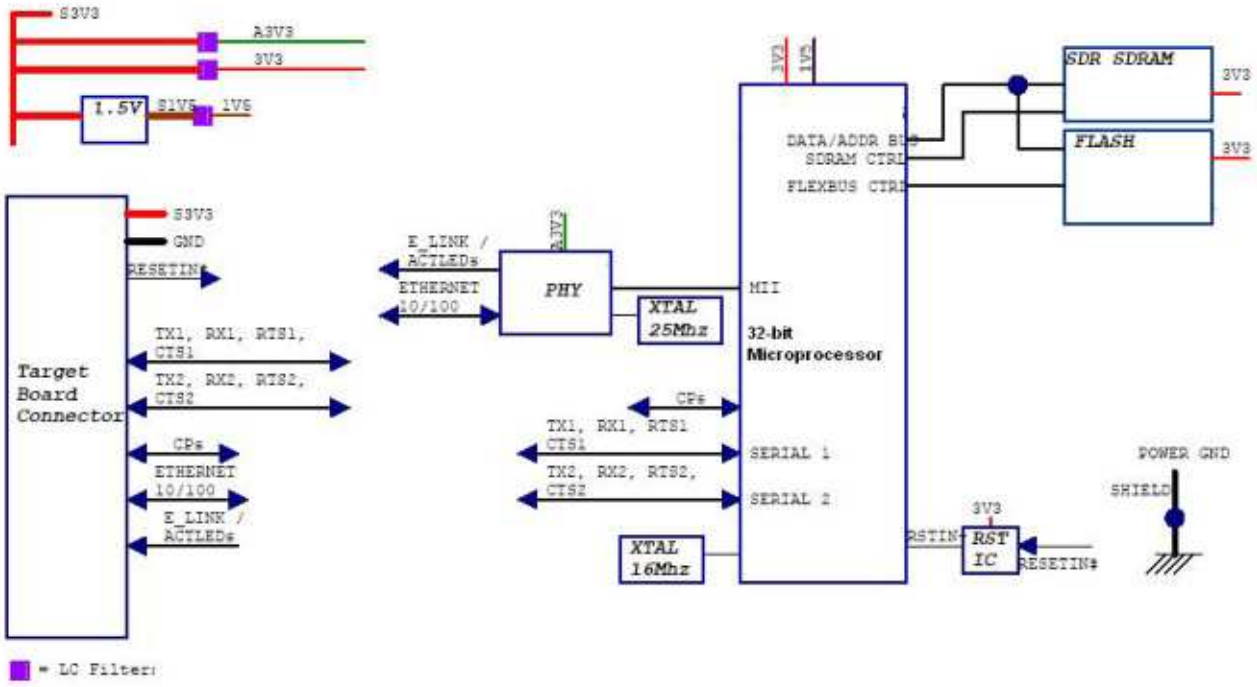
Figure 2-1. MatchPort AR Top and Front Views



MatchPort AR Block Diagram

The following drawing is a block diagram of the MatchPort AR showing the relationships of the components.

Figure 2-2. MatchPort AR Block Diagram



MatchPort AR Pinouts

There are two headers of 1x20, 2-mm pin spacing. The odd row header is designated as P1; pins are numbered 1 to 39. The even row header is designated as P2; pins are numbered 2 to 40.

PIN #	NAME	FUNCTION	PIN #	NAME	FUNCTION
P1.1	RESETIN#	Active low Reset. Leave floating if not used.	P2.2	GND	Ground
P1.3	RSVD	Reserved. Do not connect	P2.4	NC	No Connect
P1.5	TX1	Transmit Data output (logic level), port 1	P2.6	ETX+	PHY's Differential Ethernet Transmit Data +
P1.7	RTS1	Request to Send output (logic level), port 1	P2.8	ETX-	PHY's Differential Ethernet Transmit Data -
P1.9	RX1	Receive Data input (logic level), port 1	P2.10	ETCT	Differential Ethernet Transmit Data Center Tap
P1.11	CTS1	Clear to Send input (logic level), port 1	P2.12	ERCT	Differential Ethernet Receive Data Center Tap
P1.13	CP1	IO Configurable Pin 1	P2.14	ERX+	PHY's Differential Ethernet Receive Data +
P1.15	CP2	IO Configurable Pin 2	P2.16	ERX-	PHY's Differential Ethernet Receive Data -
P1.17	CP3	IO Configurable Pin 3	P2.18	E_LINKLED	Connect to Link LED. 3.3V level. Active low.
P1.19	CP4	IO Configurable Pin 4	P2.20	E_ACTLED	Connect to Acitivities LED. 3.3V level. Active low.
P1.21	TX2	Transmit Data output (logic level), port 2	P2.22	RSVD	Reserved. Do not connect
P1.23	RTS2	Request to Send output (logic level), port 2	P2.24	BOOTP_EN#	Network Boot and Boot Loader Enable pin.
P1.25	RX2	Receive Data input (logic level), port 2	P2.26	RSVD	Reserved. Do not connect
P1.27	CTS2	Clear to Send input (logic level), port 2	P2.28	RSVD	Reserved. Do not connect
P1.29	CP5	IO Configurable Pin 5	P2.30	RSVD	Reserved. Do not connect
P1.31	CP6	IO Configurable Pin 6	P2.32	RSVD	Reserved. Do not connect
P1.33	CP7	IO Configurable Pin 7	P2.34	RSVD	Reserved. Do not connect
P1.35	RSVD	Reserved. Do not connect	P2.36	RSVD	Reserved. Do not connect
P1.37	S3.3V	3.3V Power Input	P2.38	RSVD	Reserved. Do not connect
P1.39	GND	Ground	P2.40	RSVD	Reserved. Do not connect

Power and Ground

The MatchPort AR requires a regulated 3.3Vdc +/- 5% power input at P1.37 and ground at pin P1.39.

Direct connection of 3.3V and ground on MatchPort AR to 3.3V power and ground planes of the target board is recommended in place of heavy trace routing to minimize noises as well as voltage drops at the connection.

Reset

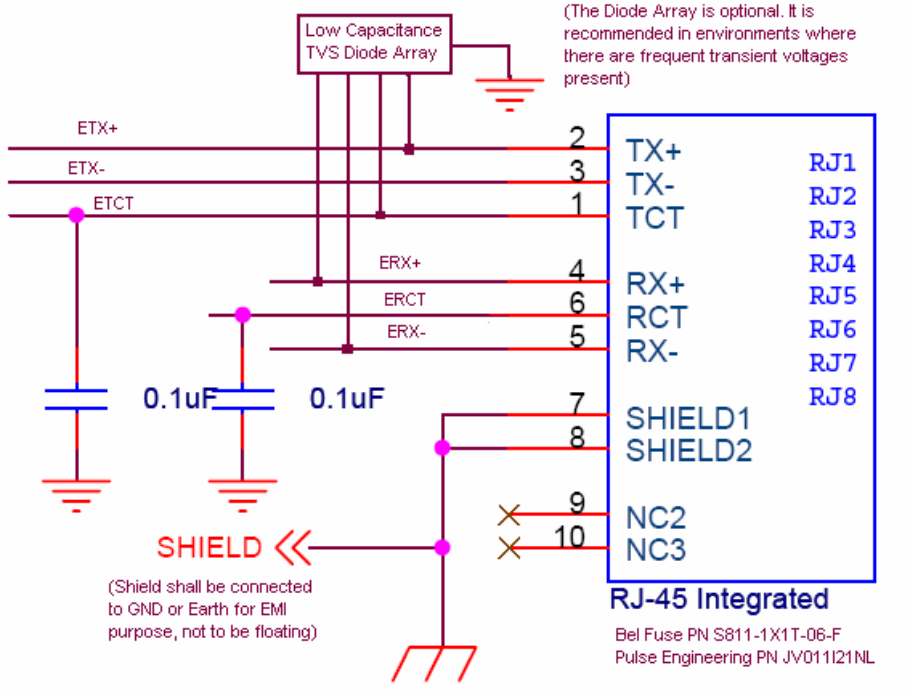
The MatchPort AR reset pin RESETIN# is an input-only pin and connects to an 811-type reset IC. This input is for a pushbutton switch type manual reset. If no external reset control is desired, leave this pin floating.

There is an on board capacitor, 0.1uF to ground, at the RESETIN# to filter out transient voltages. However, as always, it is a good practice to have RESETIN# trace on the target board as short as possible to avoid reset occurrences when transient voltages such as those caused by ESD are present.

Ethernet Connections

The MatchPort AR provides Ethernet interface transmit ETX and receive data ERX connections from a PHY device. Thus, before presenting signals to the outside world using an RJ45 jack, a 1:1 Ethernet Magnetics is needed to interface and to isolate the unit. A recommended connection diagram to an RJ45 jack with integrated 1:1 Ethernet magnetics is shown below.

Figure 2-3. Connection Diagram to an RJ45 Jack

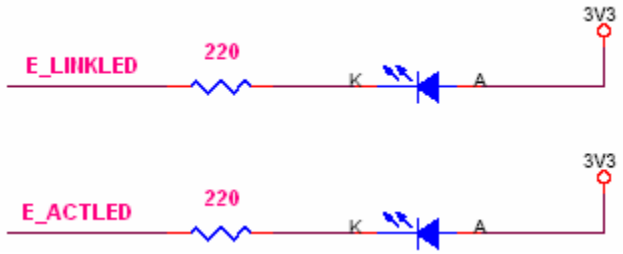


We recommend a low capacitance TVS diode array such as a Semtech SRV05-4 at ETX+, ETX-, ERX+, ERX- if frequent transient voltages are present.

Ethernet LED Connections

The E_LINKLED and E_ACTLED signals are driven by the PHY. They are active low. Recommended connections on the target board are shown below.

Figure 2-4. Recommended LED Connections



Warning: ***The MatchPort AR has two 4.7K pull-ups on the E_LINKLED and E_ACTLED signals to set up the PHY's LED Indicator Mode as Ethernet Link and Activities at Power On Reset (POR). Do not connect these two signals with any pull-down resistors as they may corrupt the logic level on these two signals at POR, causing undesired operation.***

Serial Input/Output

The unit has two serial ports compatible with RS232 serial standards at data rates up to 230 Kbps. Serial Port 1 can also be configured as RS422/485, but Serial Port 2 cannot. The serial I/O signals are 3.3V CMOS logic level. Serial signals can be connected to the OEM CPU/UART or RS232/422/485 serial transceivers. For evaluation and prototype work, it is convenient to have an external RS232 interface that can connect to the serial port on a PC. The MatchPort Demo Board has RS232/422/485 transceivers to implement this external interface. If desired, use the CPs to create a DTE or DCE-style interface using any available CPs. To create these interfaces, connect the signals according to the tables below.

Note: *CPx and CPy are any of the available CPs.*

Table 2-1. RS232 Connections

MatchPort AR		DCE Connector			DTE Connector		
Signal (Logic)	**Description**	**DB9**	**DB25**	**Signal**	**DB9**	**DB25**	**Signal**
RXD1	Data In	2	3	RXD1	3	2	TXD1
TXD1	Data Out	3	2	TXD1	2	3	RXD1
RTS1	H/W Flow Control Output	7	4	RTS1	8	5	CTS1
CTS1	H/W Flow Control Input	8	5	CTS1	7	4	RTS1
CPx	Modem Control Input	1	8	DCD	4	20	DTR
CPy	Modem Control Output	4	20	DTR	1	8	DCD

Table 2-2. JP6 RS422/485 Connections on Demo board

MatchPort AR Signal (logic)	Description	RS485 Signal	JP6 Pin	DB25 4 Wire	DB25 2 Wire	DB9 4 wire	DB9 2 wire
TXD1	Data Out	TX+485	4	14	14	7	7
TXD1	Data Out	TX-485	3	15	15	3	3
RXD1	Data In	RX+485	2	21	14	2	7
RXD1	Data In	RX-485	1	22	15	8	3
RTS1	TX Enable						
CP3	RS485 Select						
CP4	RS485 2-wire						

Sample Layouts for RS485 Connectivity

Figure 2-5. Combined RS232/422 Transceiver

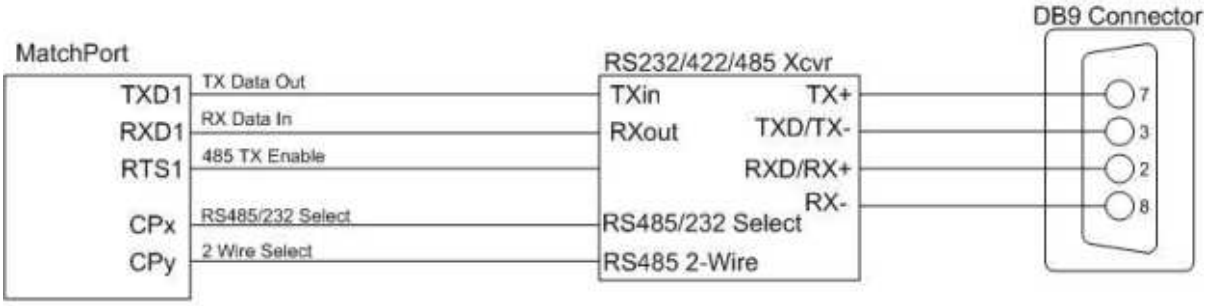


Figure 2-6. Separate RS232/422 Transceivers

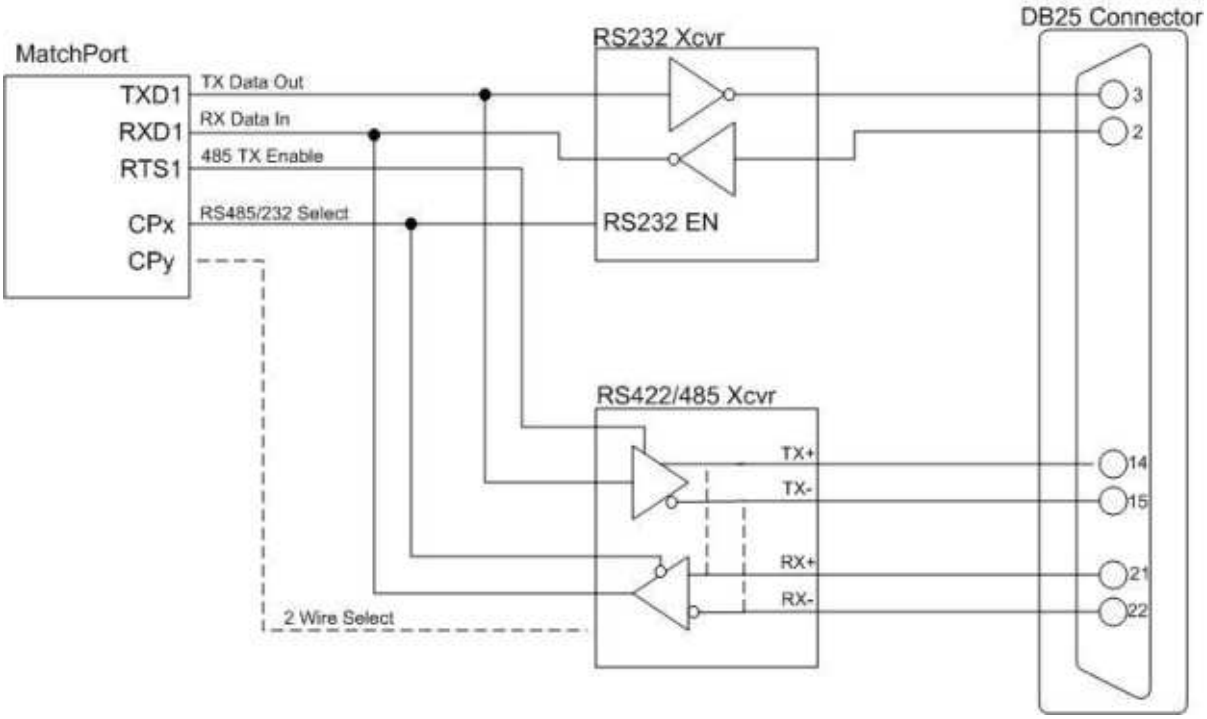
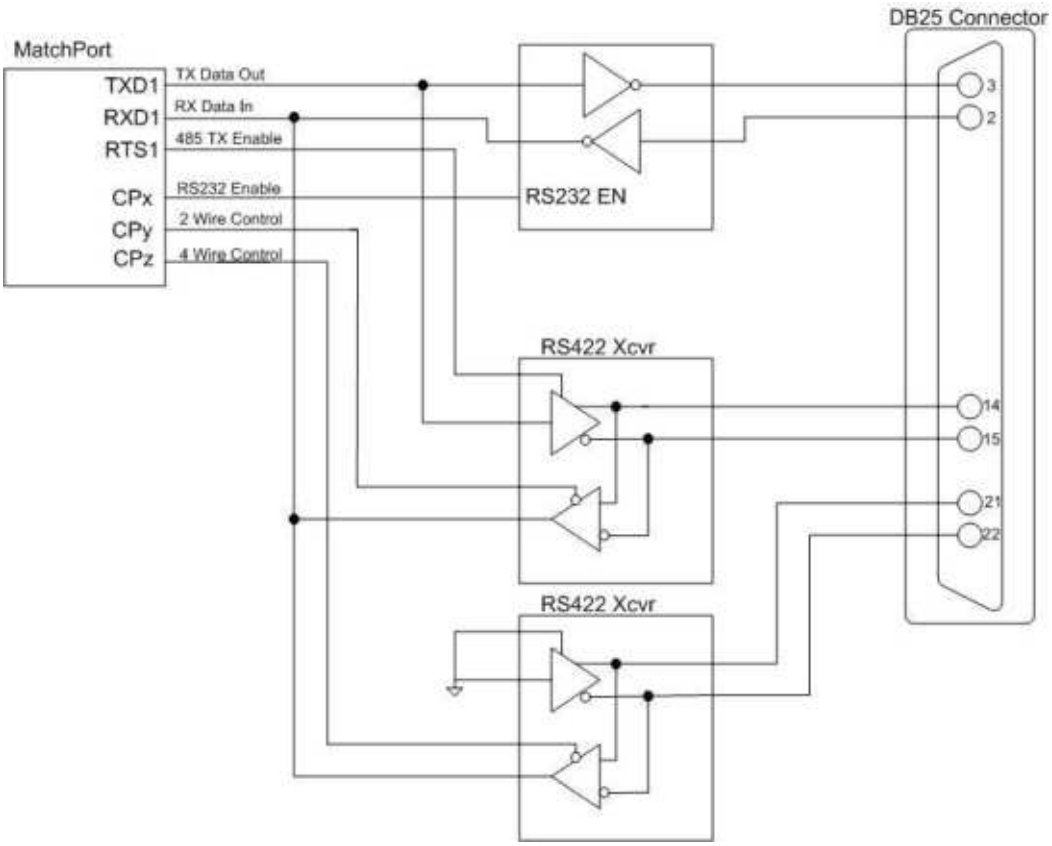


Figure 2-7. Separate RS422 Transceivers for 2-Wire and 4-Wire Setups



To protect the MatchPort AR and circuitry on the target board against ESD at serial ports, the selected transceiver(s) should have RS232/422/485 bus-pin ESD protection (typically around 15 KV) either on-chip or by external diode arrays.

IO Configurable Pins (CPs)

There are up to seven CPs if no DTR or DCD is used on the serial ports. Any CP can be configured as DTR or DCD as described above. CPs can be configured using web pages (see the User Guide). All CPs have a pull-up.

PIN #	NAME	FUNCTION
P1.13	CP1	IO Configurable Pin 1
P1.15	CP2	IO Configurable Pin 2
P1.17	CP3	IO Configurable Pin 3
P1.19	CP4	IO Configurable Pin 4
P1.29	CP5	IO Configurable Pin 5
P1.31	CP6	IO Configurable Pin 6
P1.33	CP7	IO Configurable Pin 7

BOOTP_EN#

The BOOTP_EN# pin performs two functions simultaneously. It drives an optional external diagnostics LED to indicate the status of the bootloader. It also serves as input to enable booting from the network when no valid FW image is found in FLASH.

BOOTP enable

Holding BOOTP_EN# low (via switch or jumper) during and up to 10 seconds after a reset allows booting the device with a FW image on a TFTP server only in case no valid image is present on FLASH.

The MatchPort AR will issue a BOOTP request to acquire an IP address for itself, the IP address of a TFTP server, and the filename of the FW image on the TFTP server. Then it will fetch that file via TFTP, verify, and execute it.

Diagnostics LED

After supplying power to the unit or pressing and releasing the reset button, the diagnostics LED turns on and stays on while the bootloader is running and does not encounter any errors. After the bootloader loads firmware from serial, network or FLASH, it turns off the LED right before handing over execution.

In case an error occurs during the bootloader operation, it will flash the LED. The pattern will be pause, X * long flashes, Y * short flashes, pause, X long flashes, etc.

X is the first digit of the error number and Y the second.

Following are the currently implemented errors:

INVALID_BOOTLOADER_CHECKSUM	11
NO_FLASH_IMAGE_FOUND	12
BAD_FLASH_IMAGE_FOUND	13
BAD_COMMAND_PARAMETER	14
NO_BOOTP_RESPONSE	15
BAD_BOOTP_RESPONSE	16
NO_BOOTP_TFTP_IMAGE	17
RECEPTION_TIMEOUT	18
RECEPTION_OVERRUN	19
IMAGE_OVERSIZE	21
BAD_IMAGE_CHECKSUM	22
BAD_IMAGE_DESTINATION	23
INTERNAL_CODING_PROBLEM	24

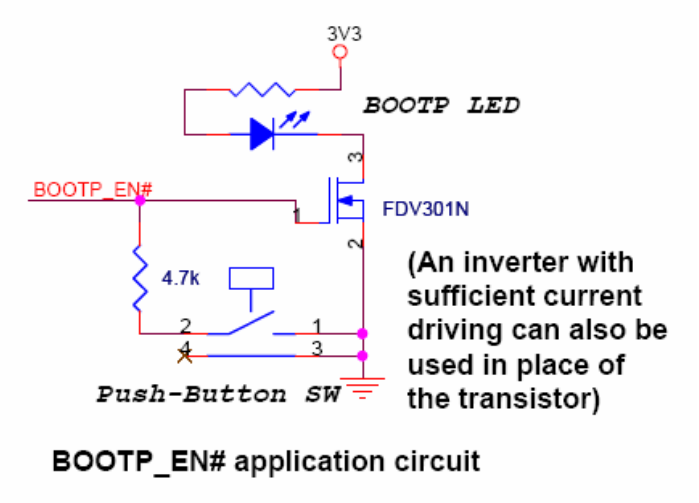
Pin Connection Options

The circuit below is an example on how to correctly connect a switch (or permanent jumper) and an LED to the BOOTP_EN# pin. The customer has the option of implementing either the switch/resistor or the driver/LED or both or none.

The switch can be replaced by a jumper or hardwire. Having the hardwire in place means that if the firmware image in FLASH becomes corrupt, the MatchPort AR will automatically send out BOOTP requests over the network. This could be a security risk. The switch or jumper allows BOOTP requests to be sent only after manual intervention.

If no switch/jumper/hardwire is installed, network recovery is only possible by issuing a `!NL` command over the serial port.

Figure 2-8. BOOTP_EN# APPLICATION CIRCUIT



BOOTP_EN# application circuit

Electrical Specifications

Caution: ***Stressing the device above the rating listed in this table may cause permanent damage to the MatchPort AR. Exposure to Absolute Maximum Rating conditions for extended periods may affect the MatchPort AR's reliability.***

Table 2-3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
Supply Voltage	V_{CC}	0	3.6	Vdc
CP Voltage	V_{CP}	-0.3	V_{CC} +0.05	Vdc
Ethernet ETX+, ETX-, ERX+, ERX- Voltage	V_{ETH}	0	V_{CC} +0.3	Vdc
Operating Temperature		-40	85	°C
Storage Temperature		-40	85	°C

Table 2-4. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units
Supply Voltage	V_{CC}	3.15	3.3	3.46	Vdc
Supply Voltage Ripples	V_{CC_PP}			2	%
Supply Current	I_{CC}		200		mA
Supply Current (In-Rush)			9/10		A/microsec
Supply Reset Threshold	V_{RST}	2.85	2.93	3.00	Vdc
CP Pull-ups, except CP5	R_{PU}		100		Kohm
CP5 Pull-up	R_{PU}		20		Kohm
CP, RX, CTS, BOOTP_EN# Input Low Voltage	V_{CP_IL}			0.8	Vdc
CP, RX, CTS, BOOTP_EN# Input High Voltage	V_{CP_IH}	2			Vdc
CP, TX, RTS Output Low Voltage (I_{OL} = 4 mA)	V_{CP_OL}			0.4	Vdc
CP, TX, RTS Output High Voltage (I_{OH} = -4 mA)	V_{CP_OH}	V_{CC} - 0.4			Vdc
E_LINKLED, E_ACTLED Current Drive (sink)	I_{LED}		12		mA (see note below)

Note: *Do not connect a pull-down resistor on E_LINKLED and E_ACTLED.*

Specifications

Table 2-5. Specifications

Category	MatchPort AR
CPU	Lantronix DSTni-FX 32-bit Microprocessor, 166 MHz internal bus, 83 MHz external bus
Memory	4 Mbits Flash and 8 Mbits SDRAM, and can be expanded. Please contact your Lantronix sales representative if you need higher memory densities.
Firmware	Upgradeable via TFTP and FTP
Configuration Pins	Up to 7 pins if no DTR or DCD is used on serial ports.
Reset Circuit	RESETIN# is low active and push-button type. Minimum RESETIN# pulse width is 2 ms at IIL = -500 µA. Reset is also triggered if 3.3V at pin P1.37 drops below 2.93V typically.
Serial Interface	CMOS (Asynchronous) 3.3V - level signals Speed software selectable and customizable (300 bps to 230400 bps)
Serial Line Formats	7 or 8 data bits, 1-2 Stop bits, Parity: odd, even, none
Modem Control	DTR, DCD using CPs
Flow Control	XON/XOFF (software), CTS/RTS (hardware), none
Network Interface	Ethernet 10/100 base TX with Auto Negotiation, and HP Auto MDIX
Protocols Supported	ARP, UDP, TCP, Telnet, ICMP, SNMP, DHCP, BOOTP, Auto IP, HTTP, HTTPS, SMTP, TFTP, FTP
Management	Internal web server, SNMP Serial login, Telnet login, DeviceInstaller software, SSH
Internal Web Server	Serves web pages WEB storage capacity: approx. 1MB
Security	Password protection, locking features
Average Power Consumption (at 3.3V)	0.67W
Weight	1 Oz (28 g)
Cover Material	ABS
Temperature	Operating range: -40°C to +70°C (-40°F to +158°F) Storage range: -40°C to +85°C (-40°F to 185°F)
Warranty	2-year limited warranty
Included Software	Windows™ 98/NT/2000/XP-based Device Installer configuration software and Windows™-based Com Port Redirector and Secure Com Port Redirector, DeviceInstaller, and Web-Manager.

Dimensions

The MatchPort AR dimensions are shown in the following diagrams:

Figure 2-9. Side Views

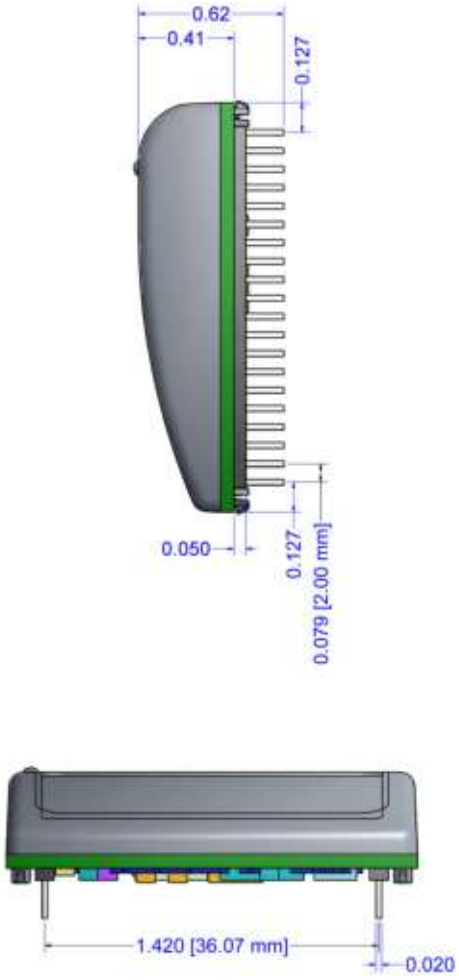
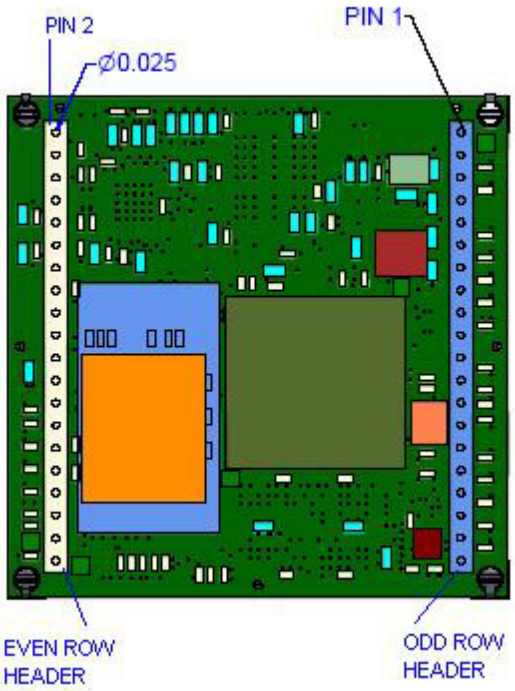


Figure 2-10. Top View



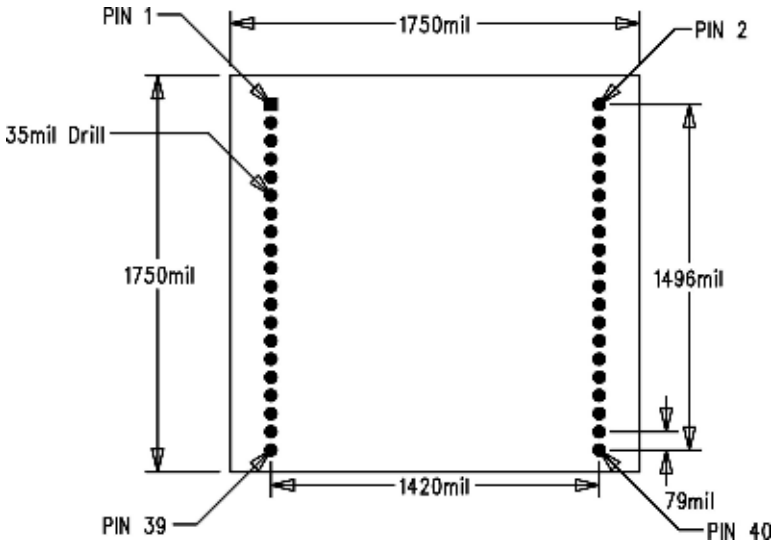
Figure 2-11. Bottom View



Recommended PCB Layout

The hole pattern and mounting dimensions for the MatchPort AR device server are shown in the following drawing:

Figure 2-12. PCB Layout (Top View)



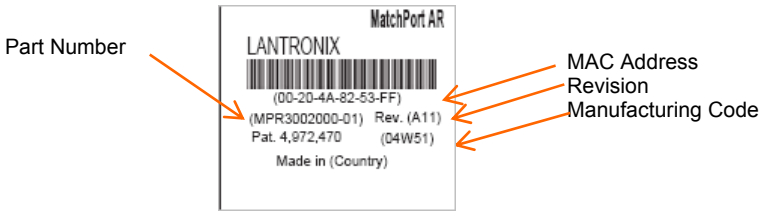
- To optimize noise and cross-talk reduction, noise immunity, and impedance matching on ETX+, ETX-, ERX+, ERX-, follow these guidelines when routing traces on the target PCB:
  - Route (ETX+, ETX-) pair as close to each other as possible, and far away from ERX+, ERX- and other signals
  - Route (ERX+, ERX-) pair as close to each other as possible, and far away from ETX+, ETX- and other signals
  - Set up PCB routing properties on each pair (ETX+, ETX-) and (ERX+, ERX-) to achieve 100-ohm impedance.
  - For EMI purposes, connect the metal housing (shield) of the RJ45 jack to Power Ground or Earth Ground and do not allow floating.

    If power ground and earth ground are to be separated, add ceramic capacitors in the range of 1000 pF to 0.1 uF in a stitching pattern between the two grounds to provide low impedance paths at high frequencies. The voltage rating on the ceramic capacitors should be much higher than the required isolation voltage between the two grounds.
- Connect 3.3V and ground on the MatchPort AR directly to 3.3V power and ground planes of the target board in place of heavy trace routing. This will minimize noises as well as voltage drops due to the trace.
- Make the RESETIN# trace on the target board as short as possible to avoid reset occurrences when transient voltages such as those caused by ESD are present.

Product Information Label

The product information label contains important information about your specific unit, such as its product ID (name), bar code, part number, and MAC address.

Figure 2-13. Product Label



3: Demonstration Kit

Using a MatchPort AR sample and the MatchPort Demonstration Kit, you can get familiar with the product and understand how to integrate the MatchPort AR into a given product design.

Contents of the Kit

The MatchPort Demonstration Kit contains the following items:

- MatchPort Demo Board
- 3.3V wall adaptor
- RS-232 cable, DB9F/F, null modem

You must obtain a MatchPort AR sample separately for use with this Demonstration Kit.

Note: *For developing application firmware on the MatchPort AR, Lantronix offers a MatchPort Plus Development board with a Background Debug Mode (BDM) connector. Please contact Lantronix for more details.*

Demo Board Description

The MatchPort Demo Board provides a test platform for the Lantronix MatchPort device server products, including MatchPort AR. The demo board uses 3.3V power from the wall adaptor same as that of MatchPort. The demo board has the following features

- 2 serial ports with an RS232/RS422/RS485 Maxim MAX3160 transceiver on each. The ports have DB9M connectors CON1and CON2.
- 1 RJ45 with integrated magnetics 1:1 for Ethernet connection; auto-MDIX compatible.
- Access to all signals on the MatchPort via header pins for measurements and connections to other places.

Serial Interfaces

The demo board has RS-232/422/485 transceivers, one per port. However, note that only Serial Port 1 supports RS232/RS422/485 on MatchPort AR. The table below lists the RS232 signals and corresponding pins on the demo board. All signals are level-shifted by the transceivers.

Table 3-1. RS-232 Signals on Serial Port 1

MatchPort Demo PIN FUNCTION	DB9 Pin #
Serial Port 1	**CON1**
TX1_232 (Data Out)	3
RX1_232 (Data In)	2
CTS1_232 (HW Flow Control Input)	8
RTS1_232 (HW Flow Control Output)	7
DCD1_232 (Modem Control Input)	1
DTR1_232 (Modem Control Output)	4
GND (Ground)	5

Table 3-x. RS-232 Signals on Serial Port 2

MatchPort Demo PIN FUNCTION	DB9 Pin #
Serial Port 2	**CON2**
TX2_232 (Data Out)	3
RX2_232(Data In)	2
CTS2_232 (HW Flow Control Input)	8
RTS2_232 (HW Flow Control Output)	7
DCD2_232 (Modem Control Input)	1
DTR2_232 (Modem Control Output)	4
GND (Ground)	5

Table 3-2. RS-422 4-Wire Connector on Serial Port 1

MatchPort Demo PIN FUNCTION	DB9 Pin #
Serial Port 1	**CON1**
TX+485 (Data Out)	7
TX-485 (Data Out)	3
RX+485 (Data In)	2
RX-485 (Data In)	8
GND (Ground)	5

Power Supply

The demo board uses an external 3.3V regulated supply (included with kit).

General Control

The following tables denote the configuration of the demo board. Configuring the jumpers re-routes signals on the demo board to drive LEDs (general purpose outputs), to use as Serial control signals, or to connect to other places on target board as General Purpose IO (GPIO).

Configuration Switch Bank

Table 3-3. Demo Board JP1 Jumper Configuration

JP1 pin/Signal	JP1 pin/Signal	Function
1/CP1	2/LED12	Jumper 1-2, CP1 Controls LED12
3/CP2	4/LED11	Jumper 3-4, CP2 Controls LED11
5/CP3	6/LED10	Jumper 5-6, CP3 Controls LED10
7/CP4	8/LED9	Jumper 7-8, CP4 Controls LED9
9/CP5	10/LED8	Jumper 9-10, CP5 Controls LED8
11/CP6	12/LED7	Jumper 11-12, CP6 Controls LED7
13/CP7	14/LED6	Jumper 13-14, CP7 Controls LED6

Table 3-4. Demo Board JP7 Jumper Configuration for CON1

JP7 pin/Signal	JP7 pin/Signal	Function
1/TXD1	2/TXA	Jumper 1-2, Send TXD to RS232/485 transceiver.
3/RTS1	4/RTSA	Jumper 3-4, Send RTS to RS232/485 transceiver. In 485 mode RTS controls transmit enable.
5/CP3	6/SEL4XXA	Jumper 5-6, CP3 high selects 485 mode, low 232 mode. Pin at transceiver is pulled down to default to 232 mode.
7/RXD1	8/RXA	Jumper 7-8, Receive RXD from RS232/485 transceiver.
9/CTS1	10/CTSA	Jumper 9-10, Receive CTS from RS232 transceiver.
11/CP4	12/HDPX4XXA	Jumper 11-12. In 485 mode, CP4 selects full duplex when low and half duplex when high. Pin at transceiver is pulled down to default to full duplex.
13/CP1	14/DTRA	Jumper 13-14, CP1 drives DTR to RS232 transceiver.
15/CP2	16/DCDA	Jumper 15-16, CP2 receives DCD from RS232 transceiver.

Table 3-xx. Demo Board JP8 Jumper Configuration for CON2

JP7 pin/Signal	JP7 pin/Signal	Function
1/TXD2	2/TXB	Jumper 1-2, Send TXD to RS232 transceiver.
3/RTS2	4/RTSB	Jumper 3-4, Send RTS to RS232 transceiver.
5/CP7	6/SEL4XXB	Do **not** add jumper since only RS232 is supported. Pin at transceiver is pulled down to default to 232 mode.
7/RXD2	8/RXB	Jumper 7-8, Receive RXD from RS232 transceiver.
9/CTS2	10/CTSB	Jumper 9-10, Receive CTS from RS232 transceiver.
11/RESERVED on MatchPort AR	12/HDPX4XXB	Do **not** add jumper since only RS232 is supported. Pin at transceiver is pulled down to default to 232 mode.
13/CP5	14/DTRB	Jumper 13-14, CP5 drives DTR to RS232 transceiver.
15/CP6	16/DCDB	Jumper 15-16, CP6 receives DCD from RS232 transceiver.

Note: *CP arrangement in the tables above is for demonstration purpose only. In customers' applications, any CP can be assigned as a function of DTR or DCD. All CPs can be used as GPIOs.*

Table 3-5. Demo Board JP5 Jumper Configuration

Pin/Signal	Pin/Signal	Function
1/3V3	2/3V3_UUT	MatchPort UUT power input jumper for current measurement. Jumper 1-2 must be installed to provide power to UUT.

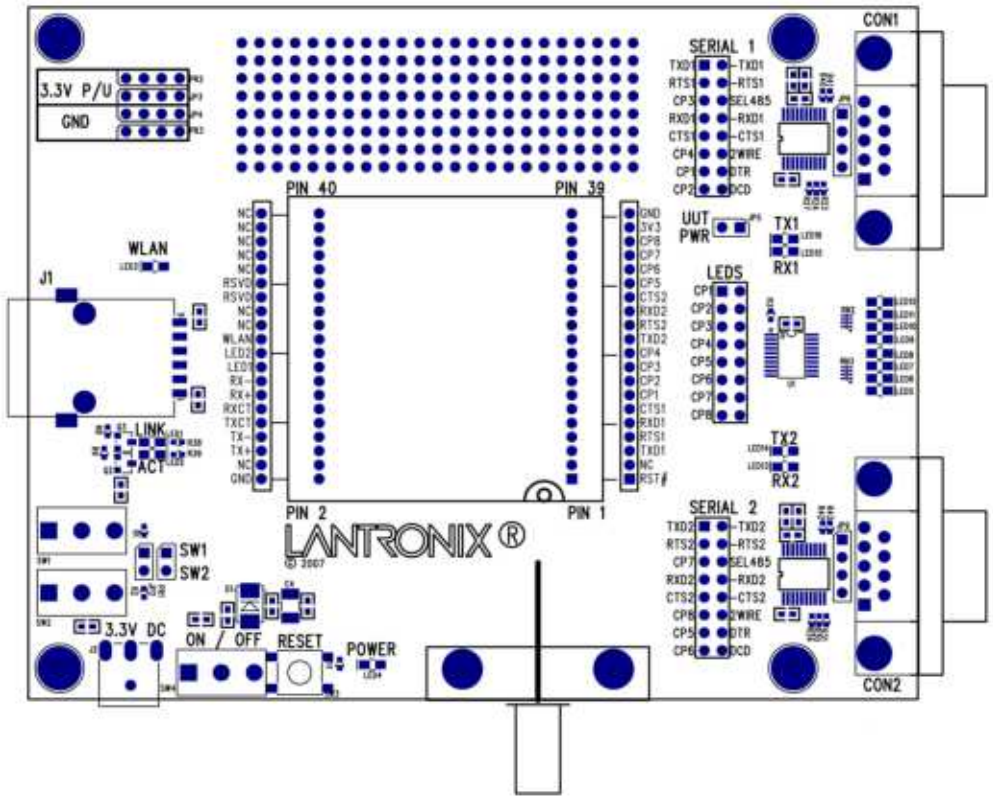
If using CPs for any combination of the demo board configurations above, please use the appropriate CP function selection as shown in Table 3-5. If assigning a CP for any function other than the serial port, remove the jumper for the associated CP pin from JP7 to avoid conflict with the serial port function.

Table 3-5. Demo Board Configurable Pin Jumper Configurations.

Configurable Pin	JP1 Function	JP7,JP8 Function
CP1	LED12	JP7, CON1 DTR
CP2	LED11	JP7, CON1 DCD
CP3	LED10	JP7, CON1 RS485/232 Select
CP4	LED9	JP7, CON1 RS485 Duplex Select
CP5	LED8	JP8, CON2 DTR
CP6	LED7	JP8, CON2 DCD
CP7	LED6	JP8, leave open

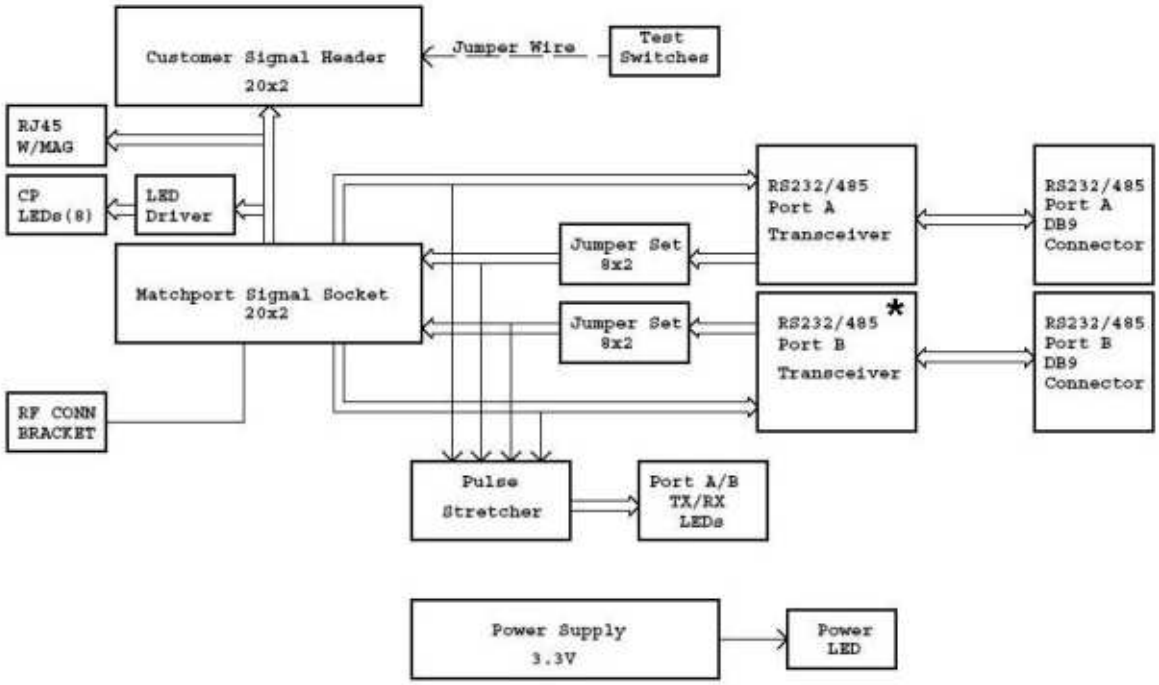
Demo Board Layout

Figure 3-1. MatchPort Demo Board Layout



Demo Board Schematics

Figure 3-2. Demo Board Block Diagram



* Depends on module used.

Figure 3-3. Schematic

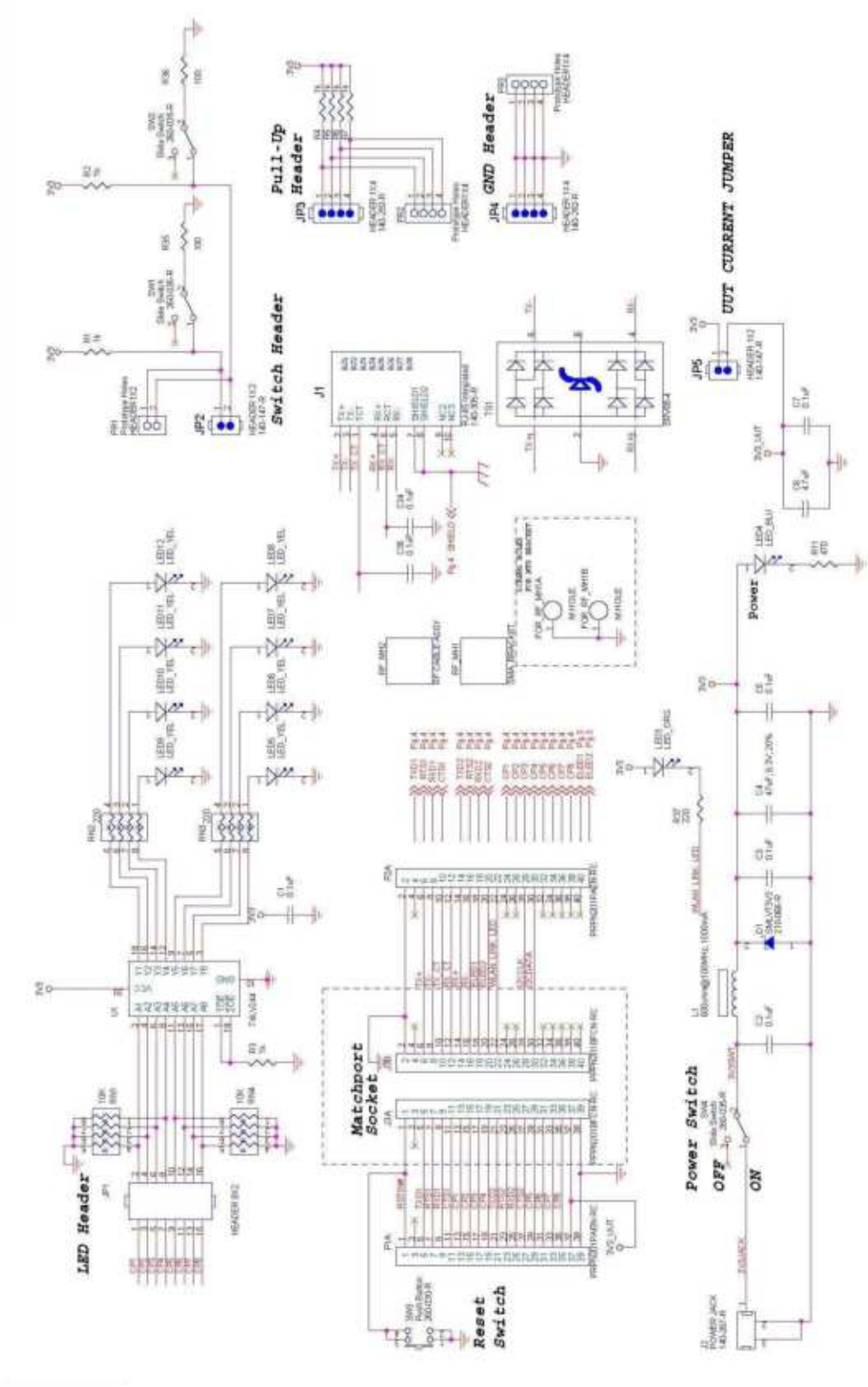


Figure 3-3. Schematic, continued

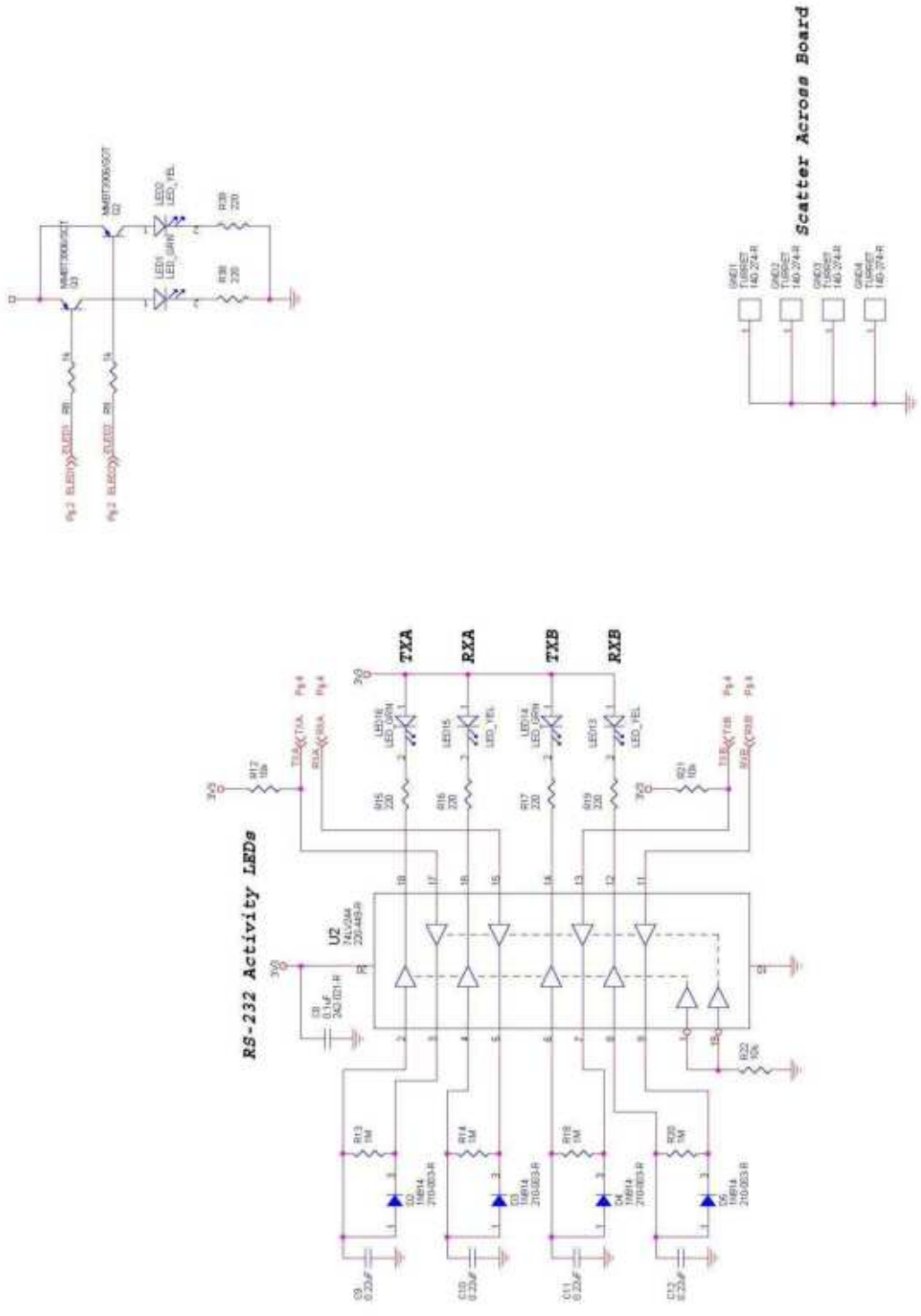
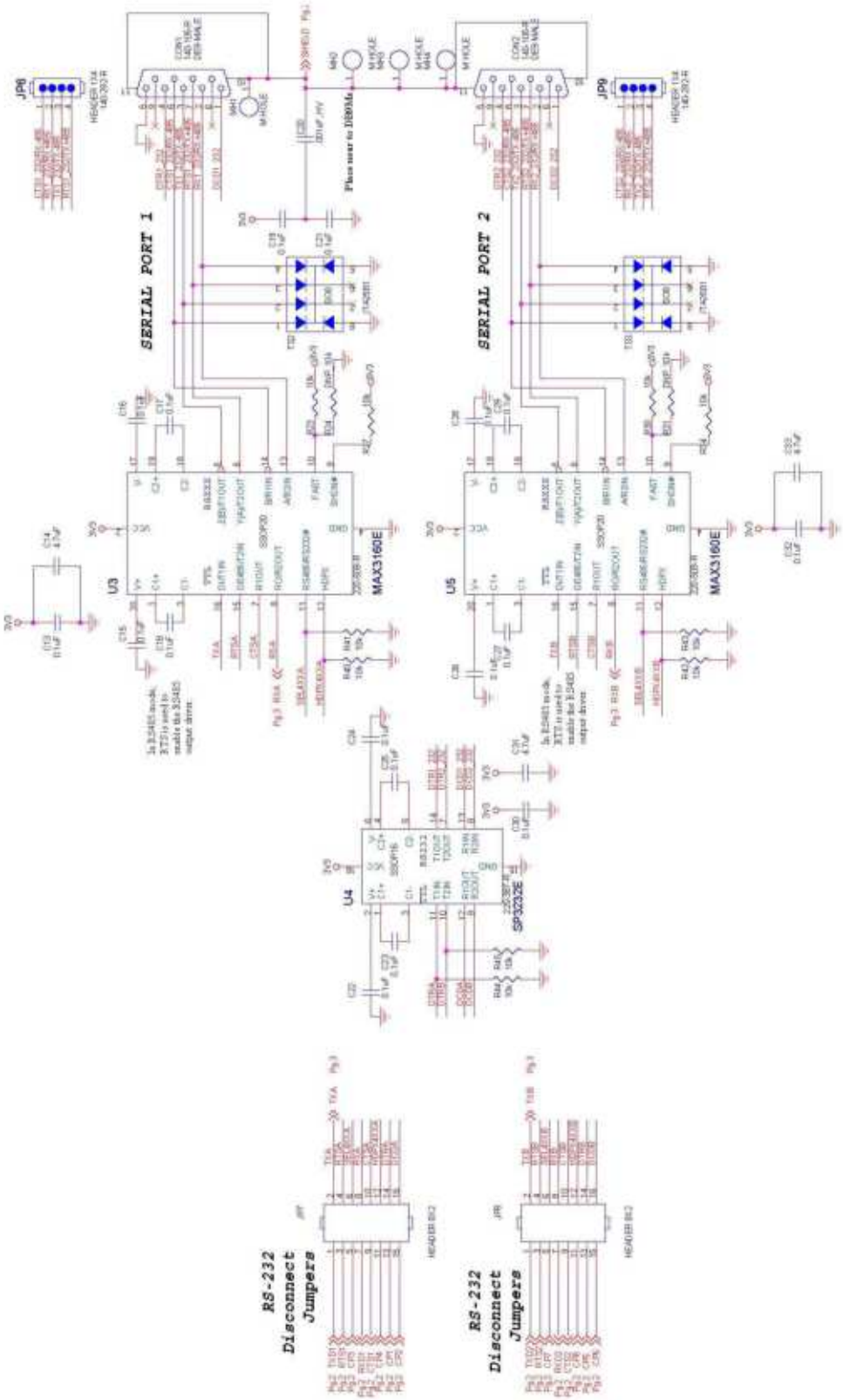


Figure 3-3. Schematic, continued



A: Compliance and Warranty Information

Compliance Information

(According to ISO/IEC Guide 17050-1, 17050-2 and EN 45014)

Manufacturer's Name & Address:

Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA

Product Name Model: MatchPort AR Embedded Device Server

Conforms to the following standards or other normative documents:

Radiated and conducted emissions
CFR Title 47 FCC Part 15, Subpart B and C
Industry Canada ICES-003 Issue 4 2004
VCCI V-3/2007.04
AS/NZS CISPR 22: 2006
EN55022: 1998 + A1: 2000 + A2: 2003
EN61000-3-2: 2000 + A2: 2005
EN61000-3-3: 1995 + A1: 2001 + A2: 2005

Immunity
EN55024: 1998 + A1: 2001 + A2: 2003

Direct & Indirect ESD
EN61000-4-2: 1995

RF Electromagnetic Field Immunity
EN61000-4-3: 2002

Electrical Fast Transient/Burst Immunity
EN61000-4-4: 2004

Surge Immunity
EN61000-4-5: 2006

RF Common Mode Conducted Susceptibility
EN61000-4-6: 1996

Power Frequency Magnetic Field Immunity
EN61000-4-8: 1994

Voltage Dips and Interrupts
EN61000-4-11: 2004

Safety

UL 60950-1

CAN/CSA-C22.2 No. 60950-1-03
EN 60950-1:2001, Low Voltage Directive (73/23/EEC)

Manufacturer's Contact:

Director of Quality Assurance, Lantronix

15353 Barranca Parkway, Irvine, CA 92618 USA

Tel: 949-453-3990

Fax: 949-453-3995

Warranty

Lantronix warrants each Lantronix product to be free from defects in material and workmanship for a period of TWO YEARS. During this period, if a customer is unable to resolve a product problem with Lantronix Technical Support, a Return Material Authorization (RMA) will be issued. Following receipt of a RMA number, the customer shall return the product to Lantronix, freight prepaid. Upon verification of warranty, Lantronix will -- at its option -- repair or replace the product and return it to the customer freight prepaid. If the product is not under warranty, the customer may have Lantronix repair the unit on a fee basis or return it. No services are handled at the customer's site under this warranty. This warranty is voided if the customer uses the product in an unauthorized or improper way, or in an environment for which it was not designed.

Lantronix warrants the media containing its software product to be free from defects and warrants that the software will operate substantially according to Lantronix specifications for a period of 60 DAYS after the date of shipment. The customer will ship defective media to Lantronix. Lantronix will ship the replacement media to the customer.

In no event will Lantronix be responsible to the user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental or consequential damage or loss of equipment, plant or power system, cost of capital, loss of profits or revenues, cost of replacement power, additional expenses in the use of existing software, hardware, equipment or facilities, or claims against the user by its employees or customers resulting from the use of the information, recommendations, descriptions and safety notations supplied by Lantronix. Lantronix liability is limited (at its election) to:

- Refund of buyer's purchase price for such affected products (without interest).
- Repair or replacement of such products, provided that the buyer follows the above procedures.

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