

WiPort™-485 Data Sheet

General Description

The WiPort-485 is the most compact, integrated solution available to add 802.11b wireless networking to any device with an RS-422 or RS-485 serial interface. Using our highly integrated hardware and software platform, you will add to your bottom line by significantly reducing product development time, risk, and cost.

The WiPort-485 is configurable for either RS-422 4-wire or RS-485 2-wire communication. It supports multi-drop RS-485 networks by providing a logic level serial interface designed to connect directly to an RS-485 transceiver chip. In the RS-485 2-wire mode, one of the PIO pins supplies the necessary transmit enable signal.

The WiPort-485 offers the highest level of integration available in a device server. Within a compact package is a DSTni x86 controller, memory, 802.11b transceiver, a 10/100 Ethernet transceiver, and dual high-speed serial ports. All of this combines to give you a complete networking solution. The WiPort-485 is designed with flexibility to support additional wireless standards without requiring redesign.

To enable access to a local network or the Internet, the WiPort-485 integrates a fully developed TCP/IP network stack and OS. The WiPort-485 also includes an embedded web server that can be used to remotely configure, monitor, or troubleshoot the attached device.

WiPort-485 serves web pages to a web browser when there is a need to gather information or communicate with networked devices. The WiPort-485 becomes a conduit between you and your device over the network or Internet.

The Windows™-based configuration software, Device-Installer, simplifies installation and setup. The WiPort-485 can also be configured locally through its serial port, or remotely over a network using Telnet (password-protected) or a web browser. Flash memory provides for maintenance-free, nonvolatile storage of web pages, and allows future system software upgrades.

Hardware & Software Description

The WiPort-485 functions independently of a PC, providing a complete hardware and software solution for adding wireless connectivity to your devices. Within a single package this powerful device server comes with an 802.11b wireless connection, a 10/100 Ethernet transceiver, a reliable and proven operating system stored in flash memory, an embedded web server, a full TCP/IP protocol stack, and WEP security.



Key Features

- Complete integrated solution
- Supports WLAN or Ethernet connectivity
- Serial to 802.11b conversion
- RS-422/485 support
- Multi-drop RS-485 network support
- Stable, field proven TCP/IP protocol suite and web-based application framework
- Easy configuration through a web interface
- Easy installation of customized web pages
- Embedded web server
- 11 General Purpose Input/Output (GPIO) pins
- 802.11b wireless interface
- E-mail alerts
- Password protection
- Upgradeable firmware via the network or serial port
- Dual serial ports
- 128 bit WEP encryption

The WiPort-485 software runs on a Lantronix DSTni controller which has 256 KB of internal SRAM, and 16 KB of boot ROM. The WiPort-485 communicates to the device through a 3.3V logic level interface. 2 MB of flash memory is included for storing firmware and web pages.

A larger memory option is available that includes 4 MB of flash memory, and an additional 1 MB of SRAM. The WiPort-485 runs on a single 3.3V supply, and has a built-in voltage supervisory circuit.

The WiPort-485 will connect through a coaxial cable “pigtail” to a panel-mounted external antenna, which makes the electro-mechanical integration very simple.

Protocol Support

The WiPort-485 uses the widely accepted 802.11b protocol to connect to a wireless access point or ad-hoc network. It uses the Transmission Control Protocol (TCP) to assure that no data is lost or duplicated and that everything sent to the connection arrives correctly at the target.

Other supported protocols are listed below:

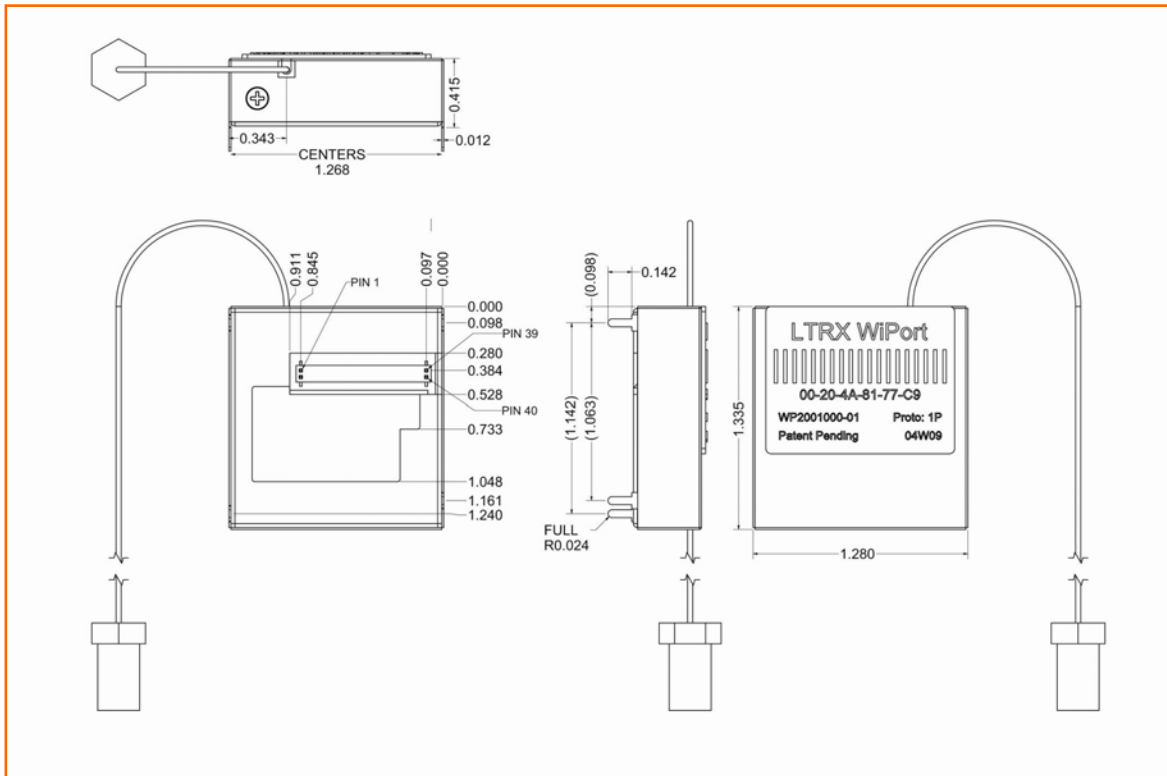
- ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP, and SNMP for network communications.
- TCP, UDP, and Telnet for connections to the serial port.
- TFTP for firmware updates.

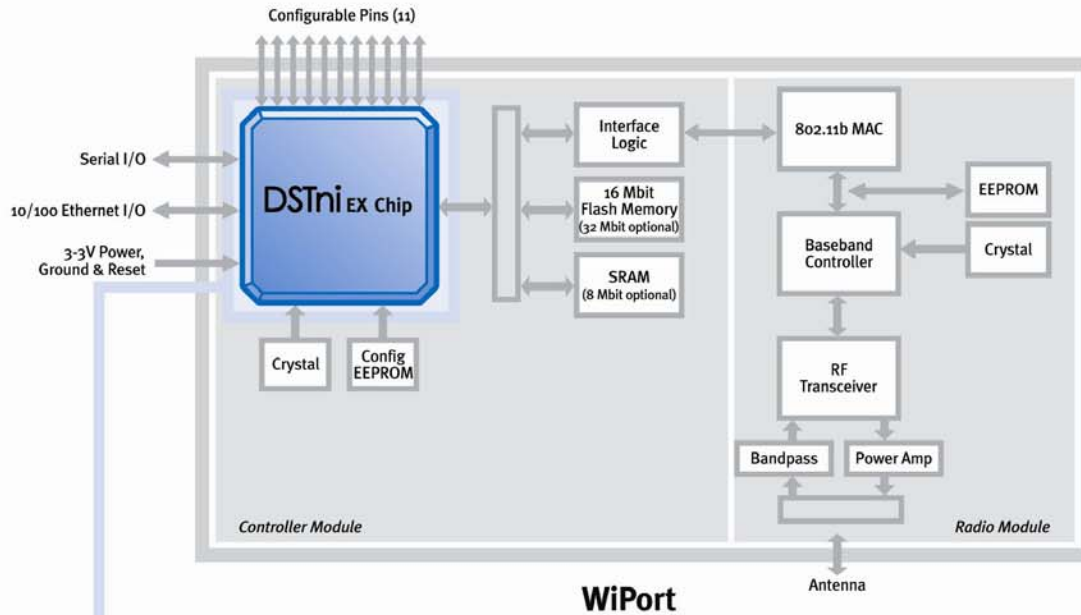
- IP for addressing, routing, and data block handling over the network.
- User Datagram Protocol (UDP) for typical datagram applications in which devices interact with other devices without maintaining a point-to-point connection.

Dimensions

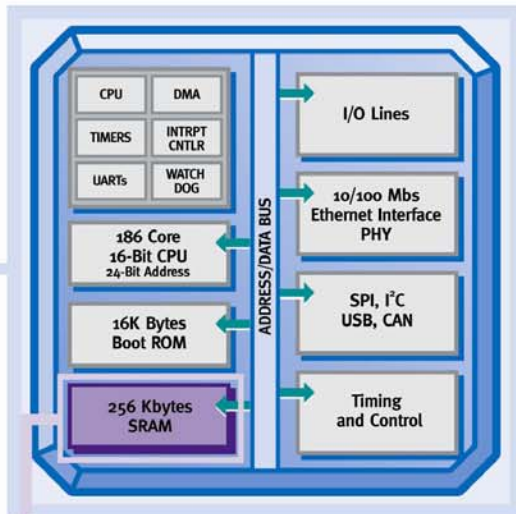
- The WiPort-485 dimensions are shown in the following drawing:

WiPort-485 — Embedded Device Server

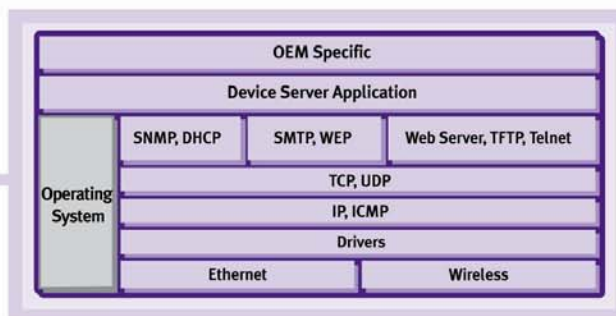




WiPort



EX Chip Hardware Diagram



Internal Software Portfolio

WiPort-485 Pin Functionality

Pin Number	WiPort-485 Pin Function
1	3.3V Power
2	3.3V Power
3	RTS0
4	TXD0
5	RXD0
6	Configurable Pin 2
7	Configurable Pin 3
8	CTS0
9	Configurable Pin 10
10	Configurable Pin 8
11	Signal Ground
12	Signal Ground
13	Reset In
14	Configurable Pin 0
15	RTS1
16	TXD1
17	RXD1
18	Configurable Pin 9
19	Configurable Pin 4
20	CTS1

Pin Number	WiPort-485 Pin Function
21	Reserved
22	Reserved
23	Signal Ground
24	Signal Ground
25	Reserved
26	Reserved
27	Ethernet Status LED2
28	Ethernet Status LED1
29	Ethernet TX-
30	Ethernet TX+
31	Ethernet RX Center Tap
32	Ethernet TX Center Tap
33	Ethernet RX-
34	Ethernet RX+
35	Configurable Pin 1
36	WLAN Power LED
37	Configurable Pin 6
38	Configurable Pin 5
39	WLAN Activity LED
40	Configurable Pin 7

Mating Connector	Description
Recommended: Samtec FTMH-120-03-F-DV-ES (shrouded header)	The mating connector is a 1mm micro header, 40 pins, 2 x 20.
Alternative: Samtec FTMH-120-03-F-DV (not shrouded)	
Alternative: Oupiin 2411-2X20GDN/017 (not shrouded)	

WiPort-485 Wireless Specifications

Category	Description	
Network Standard	IEEE 802.11b	
Frequency Range	2.412 – 2.484 GHz	
Antenna Connector	1, no diversity supported.	
Data Rates	1,2,5.5,11Mbps(802.11b HR)	
Radio	Number of Selectable Subchannels	14 channels
	Modulation	DSSS, DBPSK, DQPSK, CCK
	Antenna Connector	1
Security	WEP 64/128, TKIP	
Maximum Receive Level	-10 dBm (with PER < 8%)	
Receiver Sensitivity	-82 dBm for 11Mbps -87 dBm for 5.5Mbps -89 dBm for 2.0Mbps -93 dBm for 1.0Mbps	
WLAN Power and Link LED Current	Max: 4 mA	

WiPort-485 Technical Data

Category	Description
CPU, Memory	Lantronix DSTni-EX 186 CPU, 256 KB zero wait state SRAM 2048 KB Flash or 4096 KB Flash, 16 KB Boot ROM, 1024 KB SRAM
Firmware	Upgradeable via TFTP and serial port
Reset Circuit	Reset In is low active. Minimum reset pulse width is 2 ms at IIL = -500µA
Serial Interface	CMOS (Asynchronous) 3.3V-level signals RS-422 4-wire and RS-485 2-wire support (RS-422/485 transceivers not included) Rate is software selectable (300 bps to 921600 bps)
Serial Line Formats	7 or 8 data bits, 1-2 Stop bits, Parity: odd, even, none
Modem Control	DTR, DCD
Flow Control	XON/XOFF (software), CTS/RTS (hardware), none
Network Interface	Wireless 802.11b and 10/100 Ethernet
Protocols Supported	802.11b, ARP, UDP, TCP, Telnet, ICMP, SNMP, DHCP, BOOTP, Auto IP, HTTP, SMTP, TFTP
Data Rates With Automatic Fallback	<ul style="list-style-type: none"> ▪ 11 Mbps ▪ 5.5 Mbps ▪ 2 Mbps ▪ 1 Mbps
Media Access Control	CSMA/CA with ACK
Frequency Range	2.412 – 2.484 GHz
Range	Up to 328 feet indoors
Modulation Techniques	<ul style="list-style-type: none"> ▪ CCK (11 Mbps) ▪ CCK (5.5 Mbps) ▪ DQPSK (2 Mbps) ▪ DBPSK (1 Mbps)
Transmit Output Power	14 dBm ± 1 dBm
WLAN Peak Supply Current at 3.3V	420 mA
Management	Internal web server, SNMP (read only) Serial login, Telnet login DeviceInstaller software
Security	Password protection, locking features, 64/128 bit WEP
Internal Web Server	Serves web pages Storage capacity: 1.8 MB or 3.8 MB (depending on Flash size)
Weight	29 grams
Material	Metal shell
Temperature	Operating range: -40°C to +75°C 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 DeviceInstaller configuration software and Windows™ based Comm Port Redirector, DeviceInstaller, Web-Manager.

Average Power Consumption at 3.3V

WLAN / Ethernet Mode	High Performance (@ 88 MHz) / Nominal Performance (@ 48 MHz)	Power Consumption
WLAN mode	High performance, data transfer at 922 kbps	1200 mW, 360 mA
WLAN mode	Nominal performance, data transfer at 230 kbps	1000 mW, 300 mA
WLAN mode	High performance, no data transfer	550 mW, 170 mA
WLAN mode	Nominal performance, no data transfer	400 mW, 120 mA
Ethernet mode *		750 mW, 225 mA

* Applicable only when the wired 802.3 interface is implemented and activated.

Certifications

Description	Country	Certifications
Product Safety	USA/Canada	U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment, CSA-22.2 No. 60950-1-03 * UL 60950-1
	Europe	Standard for Safety of Information Technology Equipment, EN 60950-1
	International	IEC 60950-1

Agency Compliance

Description	Country	Compliance
Electromagnetic Compatibility	USA	CFR Title 47 FCC Part 15
	Europe	EN 300 328; Data Transmission Equipment Operating in the 2.4GHz ISM Band and Using Spread Spectrum Techniques EN 301 489-17 & EN 301 489-1; EMC Standard for Radio Equipment and Services
	Canada	Industry Canada RSS-210 Low Power License-Exempt Radiocommunication Devices
	Australia /New Zealand	AS/NZS CISPR 22 (EMC) AS/NZS 4771 (Radio)
	Japan	VCCI (EMC)

DC Characteristics for Serial 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	-0.3		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 _L	Input Leakage Current		+/-0.01	+/-1	μA

Development Kit

Introduction

A WiPort development kit is available to provide a simple, quick and cost-effective way to evaluate the WiPort-485. Use the development kit to connect the WiPort-485 to your product design, and give your newly networked product a test drive.



Features of the Development Kit

- Complete, ready-to-use WiPort and supporting Evaluation Board
- 3.3V power supply
- RS-232 cable, DB9F/F, null modem
- CAT5e UTP RJ45M/M Ethernet cable
- WiPort CD containing complete user documentation, DeviceInstaller, and the Comm Port Redirector
- Antenna

Features of the Evaluation Board

The WiPort evaluation board includes a WiPort integrated with the following features:

- Ready to use – just plug in the WiPort-485 and connect to your system
- High-speed RS-232 and RS-232/422/485 transceivers & DB9 connectors for easy connection to a PC
- Complete Ethernet interface, including magnetics, RJ-45 jack, and status LEDs
- Test header for easy access to all 40 of the WiPort-485 power & I/O pins

Ordering Information

Model	Part Number	Description
WiPort-485	WP2004000-01	Standard WiPort with RS-485 Support Min. order: 25 units
WiPort-485 SMPL	WP200400S-01	WiPort-485 Sample Case 1 WiPort-485 enclosed
WiPort Dev. Kit	WP200100K-01	WiPort Development Kit
WiPort Antenna	930-029	Accessory Antenna



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