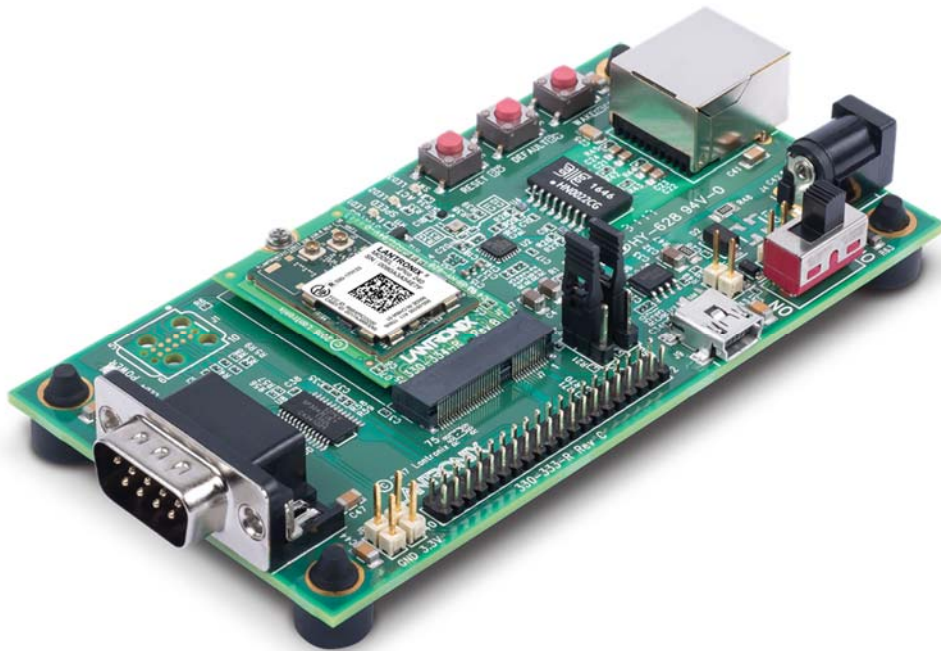




## xPico 200 Series Evaluation Kit User Guide

This guide describes how to setup the xPico® 200 series evaluation kit and provides the information needed to evaluate the included xPico 240 or xPico 250 embedded gateway modules. The intended audience is the engineers that design the xPico 200 into their products.



## Evaluation Kit Contents

Lantronix® xPico® 200 series allows OEMs to go to market faster with their smart connected products. It delivers seamless and secure Ethernet, Wi-Fi and/or Bluetooth® connectivity. Featuring advanced enterprise security, complete Wi-Fi®, network and Bluetooth stack offload, essential applications for data connectivity and control, pre-integration with the MACH10™ platform, the xPico 200 series delivers embedded gateway capability in an industry-leading compact footprint.

The evaluation kit is available in two different variants depending on xPico 200 series model that is mounted:

1. XPC240300EK - xPico 240 module (Ethernet + Wi-Fi)
2. XPC250300EK - xPico 250 module (Ethernet + Wi-Fi + Bluetooth)

Evaluation Kit Contents:

- xPico 200 module (xPico 240 or xPico 250 model) on an edge card
- xPico 200 evaluation board with socket for xPico 200 edge card module
- 5V DC power supply adapter (with international plugs)
- 2x Antennas with u.fl to R-SMA adapter cable

### Evaluation Kit Description

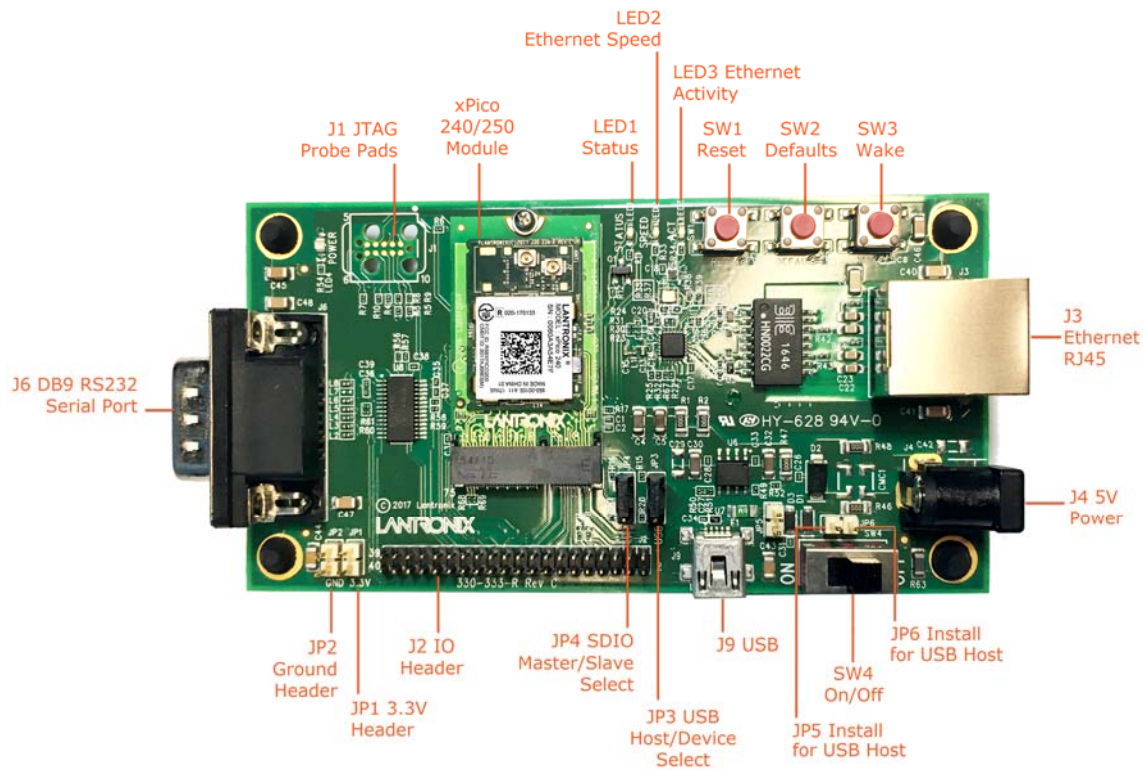
The xPico 200 evaluation kit provides a test platform for the Lantronix xPico 200 gateway module. The evaluation kit uses either 5V power from a USB device port connector or power supplied 5V barrel connector. The evaluation kit includes all necessary regulators to power the 3.3V xPico 200 module.

The evaluation kit has the following features:

- One DB9M serial port connector with an RS232 transceiver at rates up to 1 Mbps
- One RJ45 10/100 Ethernet port with on board PHY and magnetic module
- One mini-type B USB device port connector for 5V input power and device port connection to the xPico 200 module. This port can also be jumpered to act as a Host port for engineering evaluation. Refer to the xPico 200 Series Embedded Wi-Fi Gateway Integration Guide and USB.org for proper USB compliant host port implementation.
- LEDs for the xPico Ethernet and system status outputs
- Access to all logic level IO signals on the xPico 200 via header pins for measurements and connections to other places

The xPico 240/250 Evaluation Board image shows the xPico 200 evaluation kit with an attached xPico 200 module, highlighting all of the connectors and configuration jumpers. The Connectors, Header and Switches table lists each of the connectors and jumper headers along with their function. Further description and pin assignments are included in subsequent sections.

## xPico 200 Evaluation Board



### Connectors, Headers and Switches

Ref Des.	Connector/Header Functions
J7	xPico 200 Module Socket
JP1	3.3V Power Header Test point to monitor the 3.3V regulator output.
JP2	Ground Header Test point to connect to evaluation board signal ground.
JP3	USB Host/Device Select Install Jumper to pins 1 to 2 for USB Device Mode Install Jumper to pins 2 to 3 for USB Host Mode (Host mode also requires jumper install on JP5, JP6 to provide power out of J9)

<b>Ref Des.</b>	<b>Connector/Header Functions</b>
JP4	SDIO Master/Slave Select Install Jumper pins 1 to 2 for SDIO Master Mode Install Jumper pins 2 to 3 for SDIO Slave Mode
JP5	USB Host Power Out Jumper Install to provide power out for USB host mode. Do not install for device mode (default)
JP6	USB Host Power Out Jumper Install to provide power out for USB host mode. Do not install for device mode (default)
J1	JTAG Pads Install JTAG pogo pin header at J1. Use Tag-Connect TC2050-IDC cable probe and TC2050-ARM2010 adapter for JTAG connections
J2	IO pin header Header for connection to module power, serial port, and configurable pin connections.
J3	Ethernet RJ45
J4	5V Barrel Connector Input port for 5V board power
J6	DB9 RS232 Serial Port
J7	Edge connector socket for xPico 240/250 module edge card
J9	Module USB Port Defaults to USB device port. Jumper options available to run as a host port.

## Serial Interface

The evaluation kit has one RS232 port for connection to the xPico 200 internal UART. Serial port 1 is a DB9M (DTE) connector labeled J6. The null modem cable can be used to connect J6 directly to a standard PC RS232 serial port.

### RS-232 Signals on J6 Serial Interface

<b>xPico 200 Evaluation Kit Pin Function Serial Port</b>	<b>DB9M Pin Number</b>
TX_232 (Data Out)	3
RX_232 (Data In)	2
CTS_232 (HW Flow Control Input)	8
RTS_232 (HW Flow Control Output)	7
DTR_232 (Modem Control Output) (Populate R56)	4
DCD_232 (Modem Control Input) (Populate R57)	1
GND (Ground)	5

#### Note

The evaluation board is configured for RS232 on the UART signals. If attempting to use the J2 UART TTL header pins instead of the RS232 transceiver, pin 22 of the serial transceiver (U8) should be tied to ground.

## Ethernet Interface

The xPico 200 evaluation kit includes one RJ45 connector with on-board magnetics for connection to the xPico 200 module 10/100Mbps Ethernet interface. Connector J3 is the Ethernet port.

## Power Supply

The evaluation kit provides multiple input [Power Options](#). Included with the kit is a 5V wall adapter which plugs into barrel connector J4. In addition to powering from the wall adapter, the evaluation kit can be powered from a standard PC USB Host port by connecting a USB cable between the PC and J9. If powered via USB, the unit must be configured for USB device mode (JP3 pins 1 to 2, JP5 out, JP6 out).

## Power Options

<b>Input Power Option</b>	<b>Description</b>
5V Wall Cube	Connect 5V wall cube to the J4 barrel connector.
USB (device mode, power input)	Connect J9 USB power to a PC USB Host Port. Note: For J9 Note unit must be configured for USB device mode (JP3 pins 1 to 2, JP5 out, JP6 out.)

## LEDs

The xPico evaluation kit includes several LEDs to communicate module, Ethernet activity, or power status. The [LED Signals table](#) lists all LEDs and their functions.

## LED Signals

<b>J7 Pin</b>	<b>LED Ref Design</b>	<b>Color</b>	<b>LED Function</b>
6	LED1	Orange	xPico 200 Status LED blinks with patterns indicating module status. See the <a href="#">xPico 200 Series Embedded Wi-Fi Gateway User Guide</a> for a full description of the status LED blink patterns.
None	LED2	Orange	Ethernet Link Status LED is ON when there is a valid Ethernet link at 100 Mbps
None	LED3	Orange	Ethernet Activity LED blinks when there is activity on the Ethernet port

<b>J7 Pin</b>	<b>LED Ref Design</b>	<b>Color</b>	<b>LED Function</b>
None	LED4	Blue	3.3V Power LED LED is ON when evaluation board 3.3V power is up.

## J2 Header Pins

The [J2 Pin Header table](#) lists the pin functionality of the additional evaluation kit headers. Included is the J7 connection to the xPico 200 edge module connector.

## J2 Pin Header

<b>J7 module pin</b>	<b>J2 Header Pin</b>	<b>Signal</b>	<b>Function</b>	<b>Secondary Function</b>
N/A	2,4,6	VIN	Evaluation board 5V power	
1,7,18,33, 9,45,51,57, 63,69,75	1,3,5,33, 35,37,39	Ground	Evaluation board Ground	
2,4,72,74	34,36,38,40	3V3(M)	Evaluation board 3.3V power	Routes to J7 module pins via R1
50	7	CP1	Configurable pin 1	USB host mode over-current flag input
48	9	CP2/INT	Configurable pin 2	SPI interrupt input USB host mode port power enable output
46	11	CP3	Configurable pin 3	SPI-MISO

<b>J7 module pin</b>	<b>J2 Header Pin</b>	<b>Signal</b>	<b>Function</b>	<b>Secondary Function</b>
44	13	CP4	Configurable pin 4	SPI MOSI
58	15	CP5	Configurable pin 5	I2C Data
60	17	CP6	Configurable pin 6	I2C clock
42	19	CP7	Configurable pin 7	SPI Clock
40	21	CP8	Configurable pin 8	SPI Chip Select
9	8	SDCLK	SDIO Clock	
11	10	SDCMD	SDIO Command	
13	12	SDIO0	SDIO Data 0	
15	14	SDIO1	SDIO Data 1	
17	16	SDIO2	SDIO Data 2	
19	18	SDIO3	SDIO Data 3	
56	20	I2C Data 2	I2C Bus 2 Data	
54	22	I2C Clock 2	I2C Bus 2 Clock	
16	24	CP9	Configurable pin 9	PWM Output



<b>J7 module pin</b>	<b>J2 Header Pin</b>	<b>Signal</b>	<b>Function</b>	<b>Secondary Function</b>
62	26	CP10	Configurable pin 10	PWM Output
22	27	TXD1	UART transmit data output	
34	28	RTS1	UART ready to send output	
32	29	RXD1	UART receive data input	
36	30	CTS1	UART clear to send input	
	23, 25, 31, 32	No connect	Reserved-Do not connect	

Please refer to the [xPico 200 Series Embedded Wi-Fi Gateway Integration Guide](#) for evaluation board schematics.

## Buttons

<b>Button</b>	<b>Signal</b>	<b>J7 Module pin</b>	<b>Button Function</b>
SW1	EXT_RESET#	52	Module Hardware Reset Button assertion reboots the module
SW2	DEFAULTS	23	Module Reset to Defaults Assert for 6 seconds upon boot up to reset the xPico

Button	Signal	J7 Module pin	Button Function
			200 module to factory defaults
SW3	WAKE	20	Module Wake Up Button assertion will wake up the xPico 200 module from standby or sleep states. Requires the function to be enabled on the module. See the <a href="#">xPico 200 Series Embedded Wi-Fi Gateway User Guide</a> for more information on low power states.

## Additional Information

### Intellectual Property

*Lantronix* and *xPico* are registered trademarks of Lantronix, Inc. in the United States and other countries.

Patented: <http://patents.lantronix.com>; additional patents pending.

### Warranty

For details on the Lantronix warranty policy, please go to our Web site at <https://www.lantronix.com/support/warranty>.

### Disclaimer

This product has been designed to comply with the limits for a Class B digital device pursuant to Part 15 of FCC and EN55032 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. The

information in this guide may change without notice. The manufacturer assumes no responsibility for any errors that may appear in this guide.

### Additional Documentation

Visit the [Lantronix web site](#) for the latest documentation and the following additional documentation.

<b>Document</b>	<b>Description</b>
<a href="#">xPico 200 Series User Guide</a>	Provides information needed to view and configure xPico 200 series gateway settings through the Lantronix Web Manager, CLI, XML and WebAPI.
<a href="#">xPico 200 Series Integration Guide</a>	Provides information needed to integrate the xPico 200 series gateway into customer-printed circuit boards. This includes instructions for connecting various module pin function groups, and general module placement and mounting.
<a href="#">xPico 200 Series Data Sheet</a>	Provides detailed technical and compliance specifications about the xPico 200 series gateway.
<a href="#">xPico 200 Series Product Brief</a>	Provides a quick reference to xPico 200 technical specifications.
<a href="#">CAD Files</a>	The Platform PCB Package contains reference board pdf and STEP mechanical drawings, xPico 200 module pdf and STEP mechanical drawings, reference board pdf and OrCAD schematics, reference board bill of materials, reference board Mentor PADS artwork and gerber files, and the xPico 200 Module Mentor PADS symbol.
<a href="#">FAQ</a>	Provides a searchable library of Frequently Asked Questions (FAQs) and articles.

For regular updates to Lantronix documentation and to receive product change notifications, register at the [Lantronix homepage](#).

## Technical Support

[Lantronix Technical Support](#) offers many resources to support our customers and products. For instance, ask a question, find firmware downloads, access the FTP site and search through tutorials, FAQs, bulletins, warranty information, extended support services, and product documentation.

To contact technical support or sales, look up your [local office](#). When you report a problem, please provide the following information:

- Your name, company name, address, and phone number
- Lantronix product and model number
- Lantronix MAC address or serial number
- Firmware version and current configuration
- Description of the problem
- Status of the unit when the problem occurred (please try to include information on user and network activity at the time of the problem).

## Revision History

<b>Date</b>	<b>Revision</b>	<b>Comments</b>
November 2017	A	Initial document (firmware 1.6.0.0R58)