



E220 Series Cellular Router User Guide

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Revision History

Date	Rev.	Comments
October 2019	A	Initial Lantronix document. Added Lantronix document part number, Lantronix logo, branding, contact information, and links.
January 2020	B	Added power consumption values. Renamed the document to E220 User Guide.
February 2021	C	Updated the compatible models, accessories, LED states, reset button behavior, physical installation procedures, default login credentials, and Web Admin console screenshots. Reorganized content and made document enhancements.
May 2023	D	Updated topic "Preparing to Install"

For the latest revision of this product document, please check our online documentation at www.lantronix.com/support/documentation.

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1 About this Guide

1.1 Purpose and Audience

This guide provides the information needed to install the Lantronix E220 series cellular router. It covers hardware features, installation instructions, network IP configuration information, and compliance statements. This document does not cover how to configure your E220 series cellular router's software.

The information in this document assumes that the reader has working knowledge of networking (Ethernet, LAN), routing, LTE, and GNSS concepts and terminology.

1.2 Additional Documentation

Visit the Lantronix web site at <https://www.lantronix.com/support/documentation> for the latest documentation and the following additional documentation for this product series.

Document	Description
<i>E220 Series Cellular Router Quick Start Guide</i>	Provides hardware installation instructions, directions to connect the E220 series router, and network IP configuration information.
<i>ePack User Guide for E210 and E220 Series Devices</i>	Provides the information needed to configure and use the ePack software for the Lantronix E210 series and Lantronix E220 series cellular routers.
<i>E220 Series Product Brief</i>	Provides E220 series router product overview information and specifications.

2 E220 Series Compatible Models

Product name	Territories / Operators	Bands	Fall-back mode	Bands	Cellular Type
E224	EMEA	3/8/20	2G	3/8	LTE cat. 1
E224	AT&T, T-Mobile	2/4/12	None	N/A	LTE cat. 1
E225 Lite	EMEA, Asia	1/8	2G	3/8	3G ¹
E225 Lite	World	1/2/5/6/8/19	2G	2/3/5/8	3G ¹
E225	EMEA, Asia	1/8	2G	3/8	3G ¹
E225	Worldwide	1/2/5/6/8/19	2G	2/3/5/8	3G ¹
E228	Verizon Wireless	4/13	None	N/A	LTE cat. 4
E228	AT&T, Rogers	2/4/5/13/17	3G ²	2/5	LTE cat. 4
E228	Telstra, Spark	3/7/28	None	N/A	LTE cat. 4
E228	NTT Docomo	1/19/21	None	N/A	LTE cat. 4
E228	Korea, Thailand, Brazil, etc.	1/3/5/7	None	N/A	LTE cat. 4
¹ 7.2Mbps downlink; 5.76Mbps uplink ² 43.2Mbps downlink; 5.76Mbps uplink					

Table 2-1: E220 Series Compatible Models



Figure 2-1: E220 Series Cellular Router

3 Product Features

3.1 General Specification

Component	Specification
Casing	Brushed aluminium alloy
Dimensions	61.25 x 85.75 x 24.5 mm (without connectors)
Weight	165 g (approx.)
Operating temperature	E225 Lite models:-20 °C ~ +55 °C, up to 95% RH All other models: -30 °C ~ +70 °C, up to 95% RH
Storage temperature	-40 °C ~ +85 °C, up to 95% RH
SPI Flash memory	E225 Lite models: 32MB All other models: 64 MB
RAM (DDR2 SDRAM)	E225 Lite models: 64 MB All other models: 128 MB
Ethernet	10/100BASE-T
Wi-Fi	IEEE 802.11b/g/n 2.4 GHz

Table 3-1: General Specification

3.2 Power Consumption (mA)

Device State	DC input	9V	12V	24V	48V	POE-PD
<u>E224</u>						
Idle state (WAN, LAN, Wi-Fi, RS485, GPS & Cellular off)		133mA	99mA	50mA	33mA	33mA
WAN connected (LAN,Wi-Fi,RS485,GPS & Cellular off)		137mA	106mA	53mA	35mA	35mA
LAN connected (WAN,Wi-Fi,RS485,GPS & Cellular off)		138mA	107mA	54mA	35mA	35mA
Wi-Fi on (WAN,LAN,RS485,GPS & Cellular off)		182mA	138mA	71mA	45mA	45mA
RS485 connected (WAN, LAN, Wi-Fi, GPS & Cellular off)		136mA	103mA	52mA	34mA	35mA
GPS on (WAN,LAN,Wi-Fi,RS485, & Cellular off)		147mA	118mA	60mA	37mA	38mA
WAN,LAN,RS485 connected & Wi-Fi, GPS on(Cellular standby)		225mA	169mA	88mA	53mA	54mA
WAN,LAN,RS485 connected & Wi-Fi, GPS on & Cellular 900@33dBm		348mA	261mA	135mA	85mA	86mA
WAN,LAN,RS485 connected & Wi-Fi,		310mA	243mA	120mA	75mA	76mA

Device State	DC input	9V	12V	24V	48V	POE-PD
GPS on & Cellular 1800@30dBm						
E225		9V	12V	24V	48V	POE-PD
Idle state (WAN,LAN, Wi-Fi,RS485,GPS & Cellular off)		133mA	99mA	50mA	33mA	33mA
WAN connected (LAN,Wi-Fi,RS485,GPS & Cellular off)		137mA	106mA	53mA	35mA	35mA
LAN connected (WAN,Wi-Fi,RS485,GPS & Cellular off)		138mA	107mA	54mA	35mA	35mA
Wi-Fi on (WAN,LAN,RS485,GPS & Cellular off)		182mA	138mA	71mA	45mA	45mA
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GPS on (WAN,LAN,Wi-Fi,RS485, & Cellular off)		147mA	118mA	60mA	37mA	38mA
WAN,LAN,RS485 connected & Wi-Fi ,GPS on (Cellular standby)		225mA	169mA	88mA	53mA	54mA
WAN,LAN,RS485 connected & Wi-Fi ,GPS on & Cellular 900@33dBm		348mA	261mA	135mA	85mA	86mA
WAN,LAN,RS485 connected & Wi-Fi ,GPS on & Cellular 1800@30dBm		310mA	243mA	120mA	75mA	76mA

Table 3-2: Power Consumption (mA)

3.3 LAN Panel Details

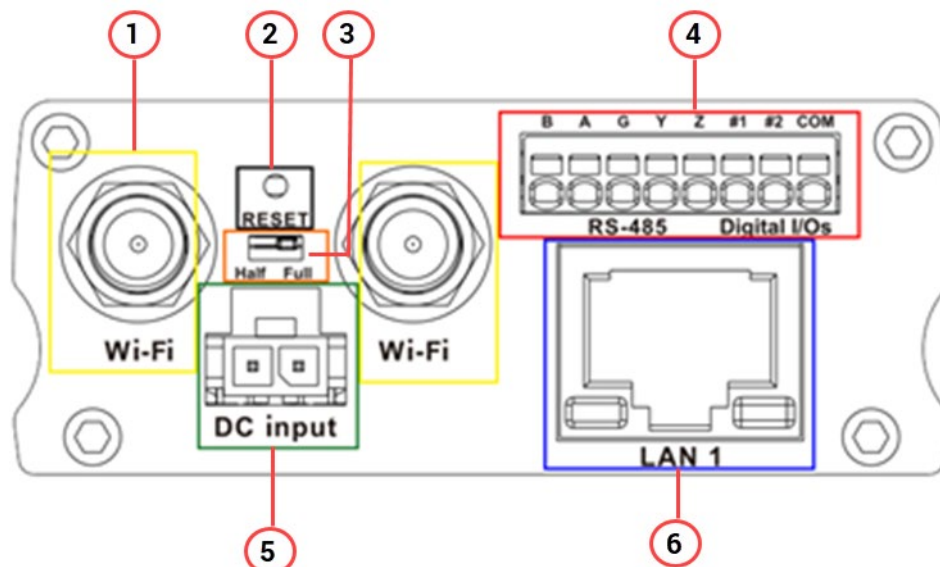


Figure 3-1: Router LAN Panel

1	Wi-Fi antenna, RP SMA connector
2	Reset button – Reset the router back to default settings. Factory reset – Press and hold the reset button for more than 5 seconds. Reboot – Press and hold the reset button for more than one second but less than 5 seconds <i>Note: For any pressed or released event to be detected the duration of the press/release event must be at least 200ms.</i>
3	Half-duplex (Left-factory setting)/Full-duplex(Right) switch
4	RS-485 and Digital input/output ports (see Figure 3-2)
5	DC input - 2-pin Microfit 3.0 connector. Black (left) negative, Red (right) positive
6	Ethernet port (LAN)

3.3.1 LAN Panel I/O Connector

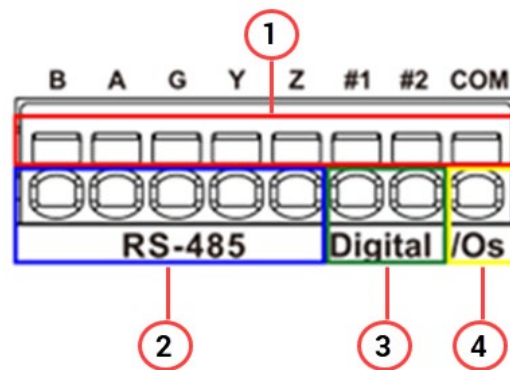


Figure 3-2: Router LAN Panel I/O Connector

1	Top slots are release pins for bottom ports
2	RS-485 Full-duplex: <ul style="list-style-type: none"> • B: Rx – • A: Rx + • G: Common Ground • Y: Tx + • Z: Tx – Half-duplex: <ul style="list-style-type: none"> • A&Y: DATA + • B&Z: DATA – • G: Common Ground
3	DIO ports configurable as input or output, 20 AWG (recommended). <ul style="list-style-type: none"> • Input detection: 5V, max. 48V • Output: Open collector, max. current 200mA
4	Ground for both DIOs

3.4 WAN Panel Details

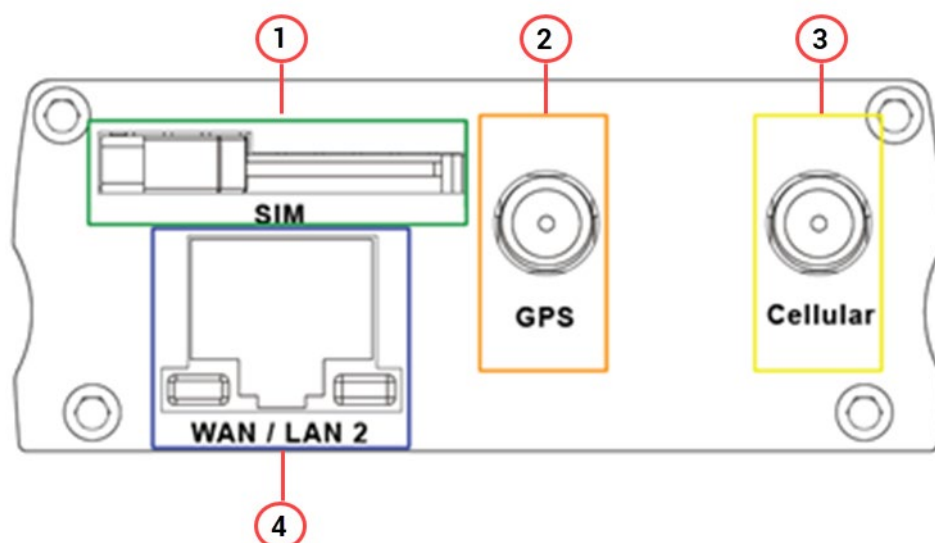


Figure 3-3: Router WAN Panel

1	Mini SIM slot (2FF)
2	GPS/Diversity SMA Antenna Connector: Female (GPS only on LTE version)
3	Cellular SMA Antenna Connector: Female
4	Ethernet Port. Can switch from WAN to LAN Supports PoE (Power over Ethernet). PoE wired Ethernet LANS allow the electrical current necessary for the operation to be carried by the data cable rather than carried by power cords, thus removing the need for an external power supply.

3.5 LED Status Indicators

The E220 operation status is indicated by six LEDs on the top panel as shown in the figure and table below.



Figure 3-4: Router Top Panel LEDs


Name	Color and Status	Description
WI-FI	OFF	Wi-Fi network is inactive
	Blue Flashing	Wi-Fi network connection traffic
	Blue ON	Wi-Fi network is up and activate
Activity	OFF	Cellular data service is not connected
	Amber ON	Cellular data service is connected
Network	OFF	Device is not registered on a cellular network
	Amber Flashing	Registered on roaming cellular network
	Amber ON	Registered on home cellular network
Signal	OFF	No signal (CSQ=0 to 5, 97, 98, 99)
	Amber Flashing	Weak signal (CSQ > 6 to 12)
	Amber ON	Strong signal (CSQ ≥ 12)
Power	OFF	Power off
	Green ON	Power on
Alert 	OFF	No alert, device is running smoothly
	Red Flashing	Cellular Module reboot, Linux Kernel booting
	Red ON	Hardware fault

Table 3-3: LED States

4 Installation

4.1 Package Contents

- E220 Series Cellular Router
- E220 Series Quick Start Guide

4.2 User Supplied Items

- SIM card (activated by mobile network operator)
- Power supply and adapters
- Wi-Fi antenna
- Cellular/GPS antenna
- Ethernet CAT5 cable to connect the router to the network
- DIN rail clip

4.3 Accessories

Lantronix accessories for use with the E220 series router are listed in the following table according to part number and application.

Lantronix accessories are available individually or as accessory bundles. To order Lantronix accessories, go to <https://www.lantronix.com/about-us/contact/>.

- **Note: Additional accessories for certain geographic locations are available. Please contact your regional Lantronix Sales office for details.**

Item	Description
Power Supply/Cable/Adapters	
KDC22	POWER CABLE, 2-PIN MICRO-FIT 3.0 (M) TO STRIPPED WIRE WITH 2.5 A FUSED, 1-M LONG CABLE
P22E0	POWER SUPPLY, 2-PIN MICROFIT 1.2 A POWER ADAPTER WITH EURO PLUG 2-PIN - EUROPE
P22E2	POWER SUPPLY, 2-PIN MICROFIT 1.2 A POWER ADAPTER WITH NEMA 2-PIN PLUG - AMERICA
P22E3	POWER SUPPLY, 2-PIN MICROFIT 1.2 A POWER ADAPTER WITH AS3112 3-PIN PLUG – AUSTRALIA / NZ
P22E4	POWER SUPPLY, 2-PIN MICROFIT 1.2 A POWER ADAPTER WITH BS1363 3-PIN PLUG - UK
Wi-Fi Antenna	
A24C0	2.4/5.8GHZ WLAN ANTENNA, SMA MALE REVERSE. LIMITED SUPPLY.
A21H0	DUAL-BAND 2.4/5.8GHZ DIPOLE ANTENNA, HINGED, RP-SMA (M)
Cellular / GPS Antenna	
A31M0	SINGLE ANTENNA, LTE REMOTE, ADHESIVE, 3-METER RG174 COAX, SMA MALE
A31H0	SINGLE ANTENNA, LTE REMOTE, ADHESIVE, 3-METER COAX, SMA MALE
A14M0	TWO IN ONE LTE + GNSS, 2*3-METER RG174 CABLE WITH 3*SMA MALE, ADHESIVE MOUNT

Item	Description
A14H0	TWO IN ONE LTE + GNSS, 2*3-METER RG174 CABLE WITH 3*SMA MALE, ADHESIVE MOUNT
A22H0	ULTRA-WIDE-BAND 698-960 / 1575.42 / 1710-2700MHZ L-SHAPED ANTENNA, HINGED, SMA (M)
Miscellaneous	
BR351	MOUNTING HARDWARE L-SHAPE DIN RAIL CLIP,

Table 4-1: Lantronix Accessories

4.4 Preparing to Install

Before installation, please gather the router, documentation, and user-supplied items. Refer to the following list for details:

- One or two activated SIM cards, provided by your mobile network operator
- Ethernet CAT5 cable for LAN network connection, if needed
- Wi-Fi and cellular antennas
- Power supply, cable, and adapters
- Personal computer (see below)

See [Accessories](#) for compatible Lantronix cables, adapters, and antennas.

Ensure that your computer is equipped with the following:

- Ethernet port or Wi-Fi connectivity and Internet service
- Web browser such as Internet Explorer 10+ or Google Chrome 30+, Mozilla Firefox 20+ or Apple Safari 4+ to access the Lantronix Web Admin Console
- DHCP client enabled on the computer to obtain a valid IP Address from the router.

Note: The equipment is intended to be mounted, not higher than 2 meters.

4.4.1 Enabling DHCP on Your Personal Computer

To enable DHCP on Windows 8 or 10:

1. To access the active network, go to Start > Control Panel > Network and Internet > Network and Sharing Center. Click the active network connection. The Network Connection Status dialog box appears.
2. From the Network Connection Status dialog, click Properties > select Internet Protocol Version 4 (TCP/IPv4) and click Properties to display the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box.
3. On the General tab, select following options:
 - Obtain an IP address automatically
 - Obtain DNS server address automatically

To enable DHCP on Mac OS:

1. Launch System Preferences, then choose Network.
2. Select Ethernet from the adapters list on the left.
3. Set the Configure IPv4 drop-down to Using DHCP

4.5 Connecting the E220 Router

The steps for connecting the router are:

1. Insert the SIM card.
2. Connect the cellular and Wi-Fi antennas.
3. Connect the AC power.
4. Connect the router to a computer.
5. Run Quick Setup to configure network settings.

4.5.1 Insert the SIM Card

Insert the SIM card in the router as shown below.

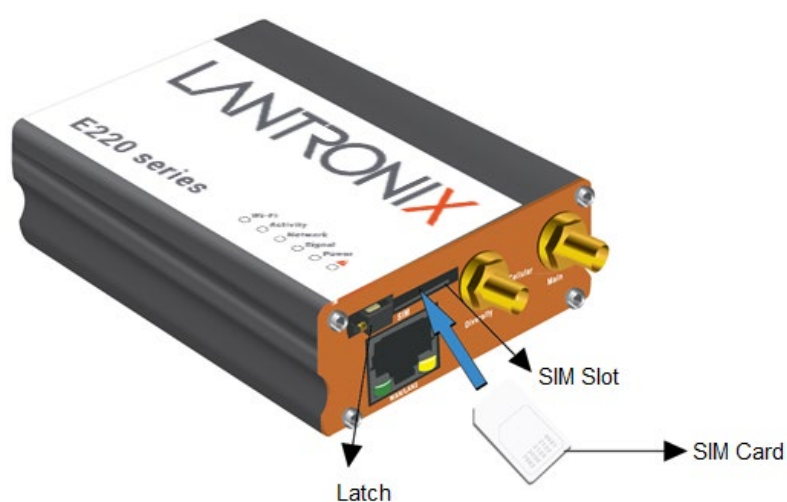


Figure 4-1: Inserting the SIM Card in the Router

4.5.2 Connect the Antennas

The table shows the cellular/GPS main and auxiliary antenna options for the E220 series models.

Main	Model	Auxiliary	Comment
Cellular only	E225 Lite	N/A	
	E224 Lite	Cellular only	Please ensure that the antenna used is suitable for the cellular frequencies in use, for both main and auxiliary connectors
	E225	GPS only	
	E224 E228	2-mode GPS and cellular	Please ensure that the antenna used is suitable for the cellular frequencies in use, for both main and auxiliary connectors

Table 4-2: E220 Series Main and Auxiliary Antennas

To connect the Wi-Fi/cellular/GPS antenna:

1. Connect the cellular antenna to the main connector of the E220 series device as shown in the figure below.
2. Use your fingers to securely tighten (clockwise direction) the antenna connector to the connector on the base unit.
3. If the Lantronix Router package includes dual antennas; connect the Diversity Antenna to the Diversity Connector.

Note:

- *Dual antenna provides RF diversification, which allows for improved signal strength and thus better performance for both Wi-Fi and cellular,*
- *Certain circumstances and environments may require the use of a specific type of antenna or one mounted in a different location. Lantronix has many antenna options to choose from, please contact Lantronix Technical Support at <http://www.lantronix.com/support>.*

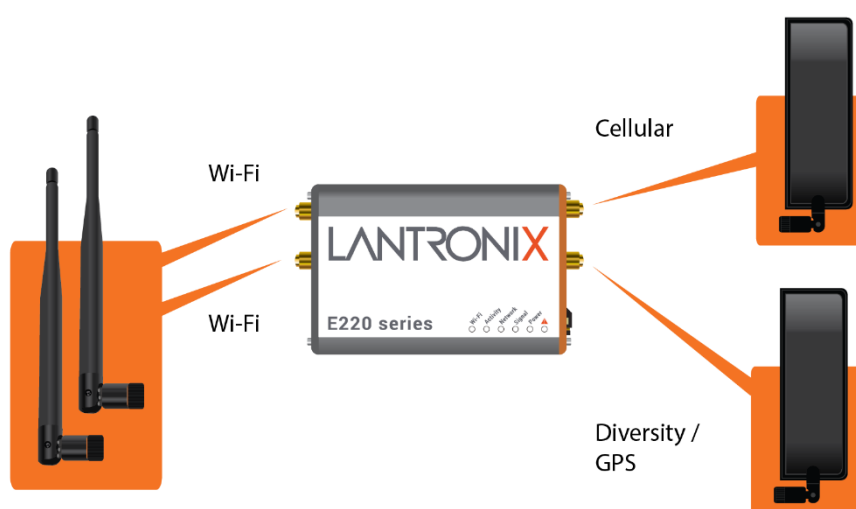


Figure 4-2: E220 Series Wi-Fi and Cellular Antenna Connections

4.5.3 Connect the AC Power

To connect the AC power:

1. Connect the AC power to the DC in connector, then connect the Micro-Fit connector to the power input, located on the LAN-side panel of the Lantronix Router.
2. Plug the AC cord into a standard AC receptacle as shown below.

The power LED will light when power is applied.

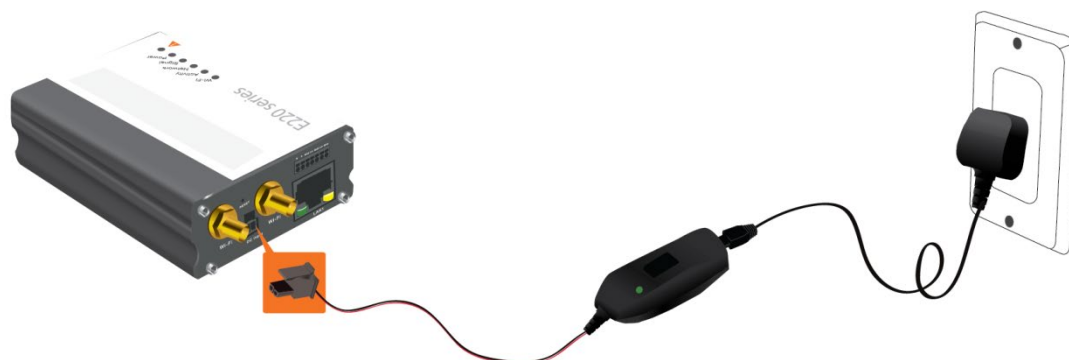


Figure 4-3: Connecting the AC Power Connector

4.5.3.1 Power over Ethernet

An alternate option is to power the Lantronix Router over Ethernet port as the WAN port supports Power over Ethernet (PoE).

NOTE: Please refer to the [Appendix](#) for Power over Ethernet connections example.

4.5.4 Connect the Router to a Computer

Connect the router to your computer using the router's Wi-Fi access point or an Ethernet cable and log in to the Web Admin page to verify the LAN connection.

To connect via Wi-Fi:

1. On the PC, connect to the router's Wi-Fi access point. The table below shows the default wireless access point SSID.

Parameter	Details
SSID	Lantronix E21X - for E210 series devices Lantronix E22X - for E220 series devices
WPA/WPA2 TKIP Key	W1rele\$\$

2. Open the browser to 192.168.1.1. The Web Admin log in page is displayed.

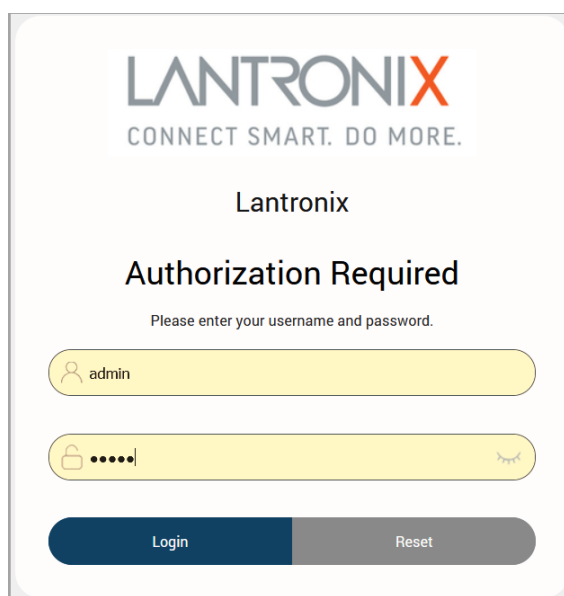


Figure 4-4: Web Admin Login Page

- Log in to the Web Admin console. If the installed ePack firmware is version 2.4.4 and higher, the default factory passwords are:

User	Default Password
admin	admin
root	L@ntr0n1x

For password change requirements and for older firmware versions, please see [Default Configuration for Web Admin Page](#). We recommend that you set a unique, strong password for the router and store the password in a secure location.

- Next, you are ready to configure the network settings from the Quick Setup page.

To connect via Ethernet:

- Connect an Ethernet cable between the LAN port on the front panel of the router and the Ethernet port on the computer.

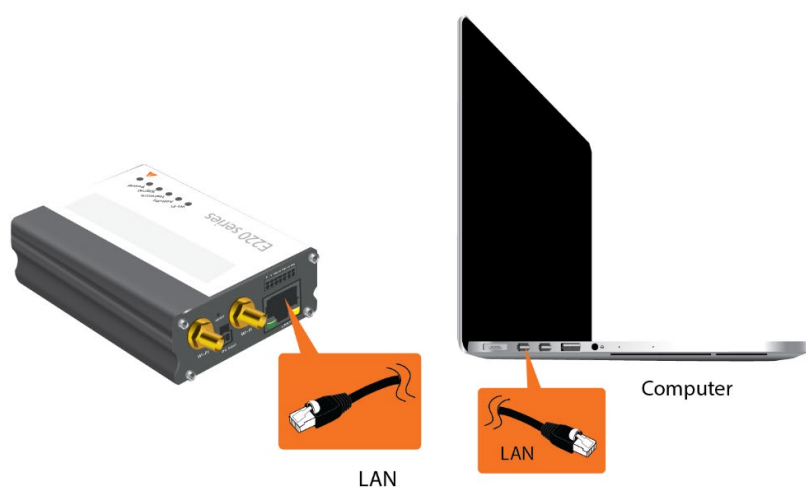


Figure 4-5: Router to Computer LAN Connection

2. Open the browser to 192.168.1.1. The Web Admin log in page is displayed.

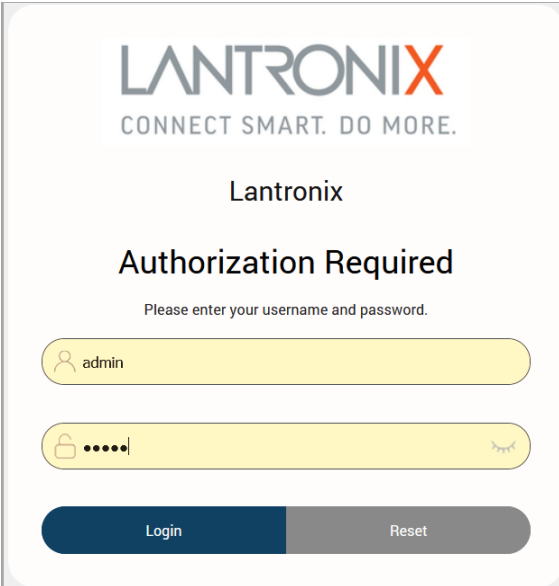
The image shows the Lantronix Web Admin login page. At the top is the Lantronix logo with the tagline "CONNECT SMART. DO MORE.". Below the logo, the text "Lantronix" is displayed, followed by "Authorization Required". A prompt says "Please enter your username and password.". There are two input fields: the first is for the username, which has "admin" entered; the second is for the password, which has masked characters "•••••" and a toggle icon on the right. At the bottom are two buttons: "Login" (dark blue) and "Reset" (grey).

Figure 4-6: Web Admin Login Page

1. Log in to the Web Admin console. If the installed ePack firmware is version 2.4.4 and higher, the default factory passwords are:

User	Default Password
admin	admin
root	L@ntr0n1x

For password change requirements and for older firmware versions, please see [Default Configuration for Web Admin Page](#). We recommend that you set a unique, strong password for the router and store the password in a secure location.

3. Next, you are ready to configure the network settings from the Quick Setup page.

4.5.5 Quick Setup

Quick Setup network configuration helps get the IP network port up and running so that you can configure other router settings. To skip the Quick Setup and directly configure the network settings including advanced settings, go to the Network tab.

For details on software configuration, please refer to the *Lantronix ePack User Guide for E210 and E220 Devices*.

To run quick setup:

1. Log in to the Web Admin page and click **Quick Setup**.

The Quick Setup > Network Setup page is displayed. Basic network parameters for LAN, WAN, Cellular, and Wireless LAN can be configured from the Network Setup page.

Network Setup
Here you can configure the basic aspects of your device like its hostname or the timezone.

Local Area Network (LAN)

IPv4-Address 192.168.1.1
If this parameter is modified, use "Apply Unchecked" instead of "Save & Apply" to avoid roll back of the configuration

IPv4-Netmask 255.255.255.0

Wide Area Network (Wired WAN)

Protocol Manual
Manual => Used if you have static IP allocated from ISP.
Automatic => Used if you need to do dhcp with ISP.
PPPoE => Used if you need to do dial-up over ethernet with ISP.

Cellular

SIM settings

APN _____

PIN _____

Authentication Type NONE

Enable roaming ☐

Cid 1

Wireless Network (LAN)

Disable ☐

Mode ap

SSID Lantronix E22X

Encryption psk-mixed

Password

Figure 4-7: Quick Setup

2. Modify the LAN, WAN, Cellular, and Wi-Fi network settings as necessary. See [Default Interface Configuration](#) for details of default connection settings.
3. Click **Save & Apply** to store the configuration.

Notes:

- *In Cellular, all fields such as APN depend on SIM cards provider/cellular network operator, enquire with them for authentication credentials if needed.*
- *After storing the network configuration, the cellular connection should be established within one minute, provided there is adequate signal reception (if the default setting is used).*

4. To see the status of the network connections, click **Status** in the main menu and view the Overview page.

4.5.6 Default Configuration

All usernames and passwords are case sensitive.

4.5.6.1 Default Configuration for Web Admin Page

If the installed ePack firmware is version 2.4.4 and higher, the default factory passwords are:

User	Default Password
admin	admin
root	L@ntr0n1x

Table 4-3: Default Web Admin Page Credentials

Note

- *ePack firmware versions 2.4.4 and above require you to change the factory default passwords before any other router configuration can be done. Both the admin and root passwords must be changed.*

If the installed ePack firmware is older than version 2.4.4, the default factory passwords are:

User	Default Password
admin	admin
root	M@estroW1rele\$\$

Table 4-4: Default Web Admin Page Credentials

Note: Username and password are both case sensitive.

4.5.6.2 Wireless Access Point SSID

The wireless access point SSID may be configured in the Web Admin console.

Parameter	Details
SSID	Lantronix E21X - for E210 series devices Lantronix E22X - for E220 series devices
WPA/WPA2 TKIP Key	W1rele\$\$

Table 4-5: Default Wi-Fi Credentials

4.5.6.3 Default Interface Configuration

Interface	Details
WAN (Ethernet)	Automatic (DHCP client) Priority source of Internet with Cellular backup
LAN (Ethernet)	Active DHCP with starting IP address 192.168.1.100 with pool of 100 clients.
Cellular	No PAP/CHAP authentication
Wireless (LAN)	Wi-Fi enabled as access point with SSID "Lantronix E21X" or "Lantronix E22X"

Table 4-6: Default Interface Configuration

5 Conformity

5.1 Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy.

- It not installed and used in accordance with the instructions, may cause harmful interference to radio communications. here is no guarantee that interference will not occur in a particular installation.
- If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

5.2 FCC RF Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

5.3 ISED Notice

This device complies with Innovation, Science and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IC: 20055-E228F7, 20055-E224LITEF2, 20055-E224LITEF4, 20055-E225LITEF3, 20055-E225F3, 20055-E228F2, 20055-E228F5

5.4 ISED RF Exposure Information

This device complies with ISED radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the ISED radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Cet appareil est conforme aux limites d'exposition aux rayonnements de la ISED CNR-102 définies pour un environnement non contrôlé. Afin d'éviter la possibilité de dépasser les limites d'exposition aux fréquences radio de la ISED CNR-102, la proximité humaine à l'antenne ne doit pas être inférieure à 20 cm (8 pouces) pendant le fonctionnement normal.

6 Appendix

6.1 Pin Power Cable Schematic

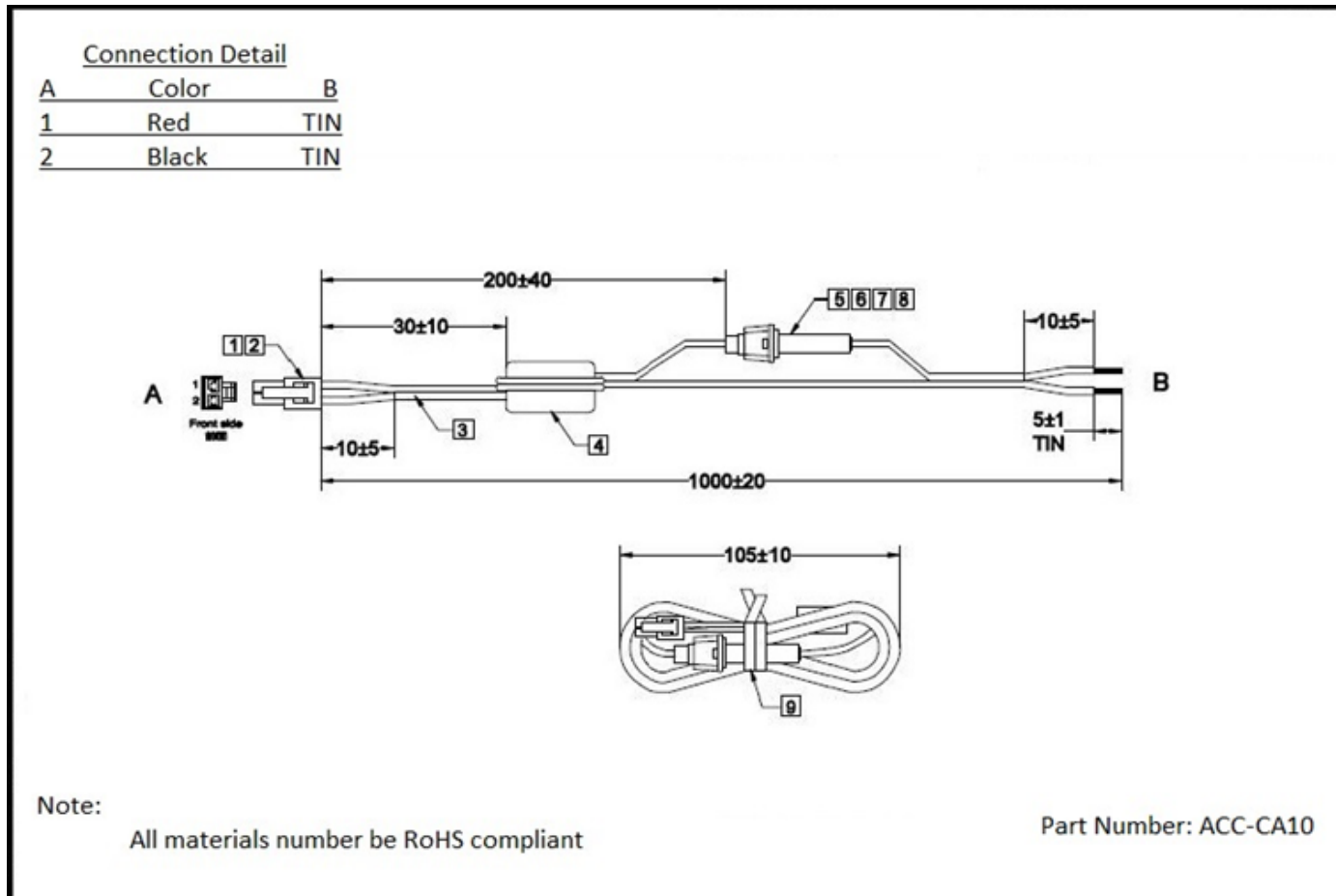


Figure 6-1: Pin Power Cable Schematic

6.2 Power over Ethernet

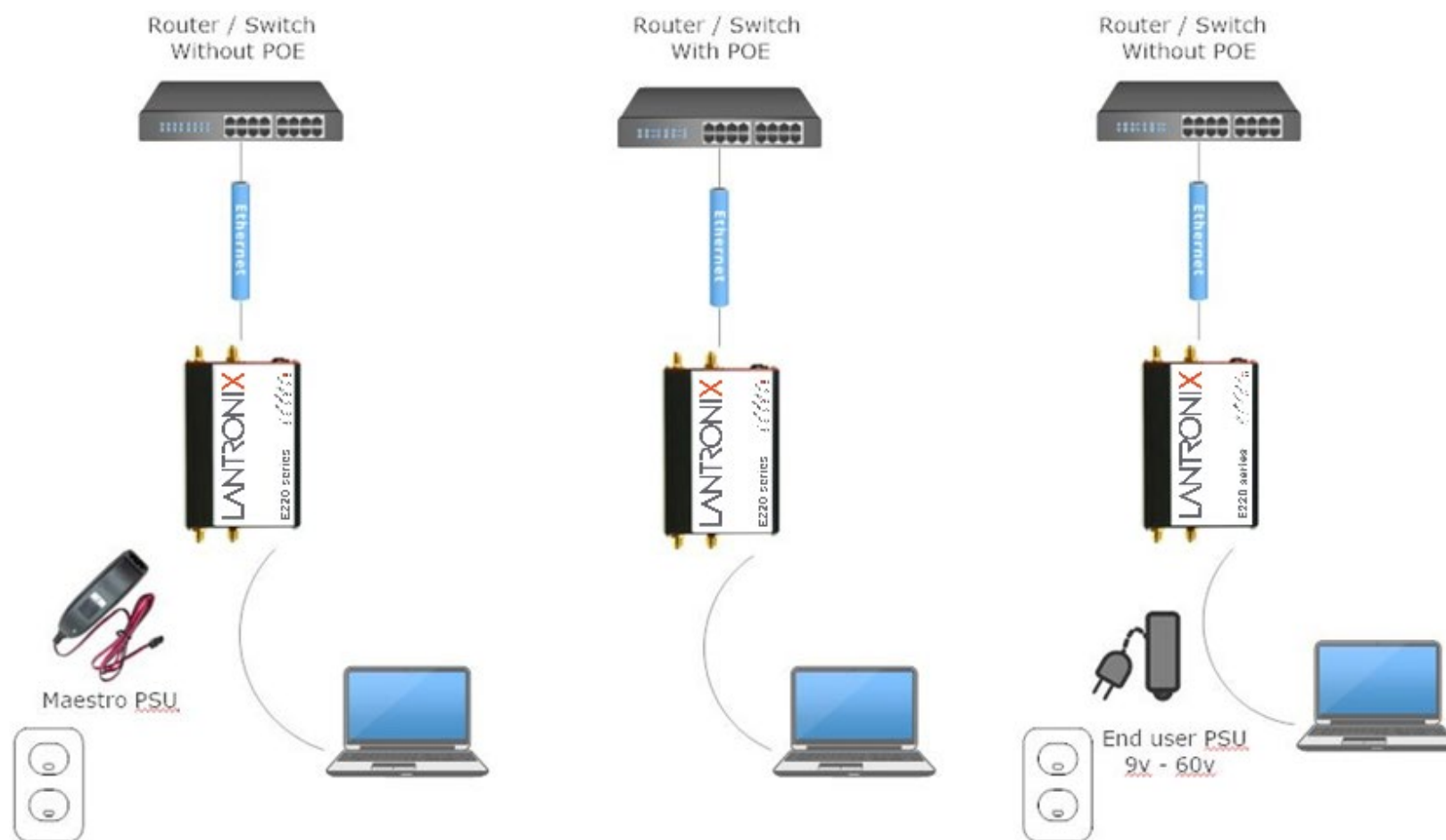


Figure 6-2: Power over Ethernet

6.3 RS485 Wiring Diagram

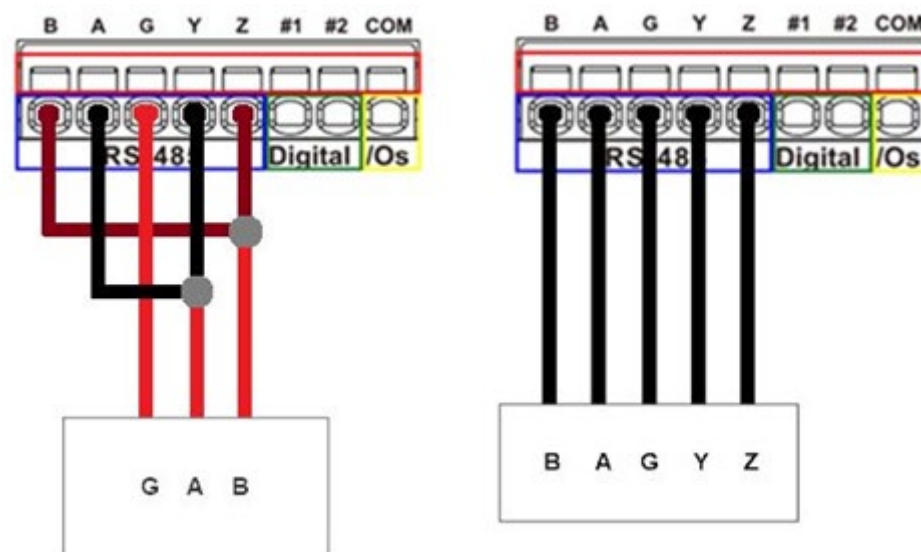


Figure 6-3: Half-Duplex (Left), Full-Duplex (Right)

6.4 Certified Antenna

Dipole Wi-Fi antenna:

- 5 dBi high performance antenna
- RP-SMA(M) hinged antenna
- RoHS compliant
- Peak gain: 3.8 dBi @2.4 GHz ~ 2.5 GHz

WWAN antenna:

- Dipole 4G swivel blade antenna
- Performance across the LTE frequency bands
- 698-960 / 1710-2170 / 2500-2700 MHz
- Up to 2 dBi gain
- SMA connector
- RoHS compliant product

6.5 Antenna Selection

Selection of Wi-Fi antenna:

- Dipole, Peak Gain < 3.8 dBi @ 2.4 GHz ~ 2.5 GHz

Selection of antenna type:

- Using the same dipole antenna type as certified module & Modem for FCC as above or external antenna with length > 20 cm.