

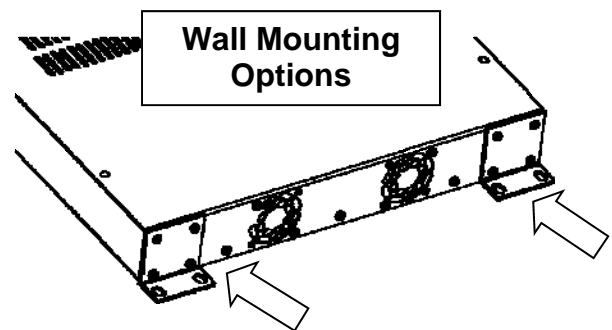
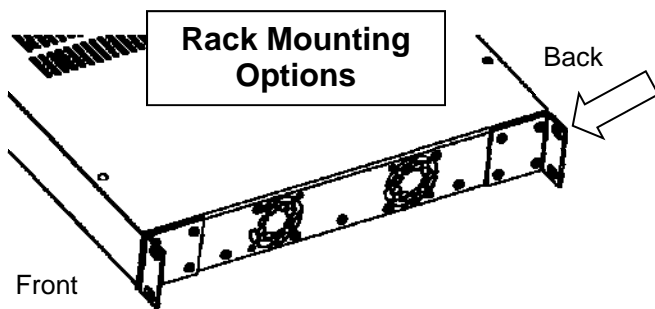


Reduce risk of fire or electrical shock. Do not expose this product to rain or moisture.

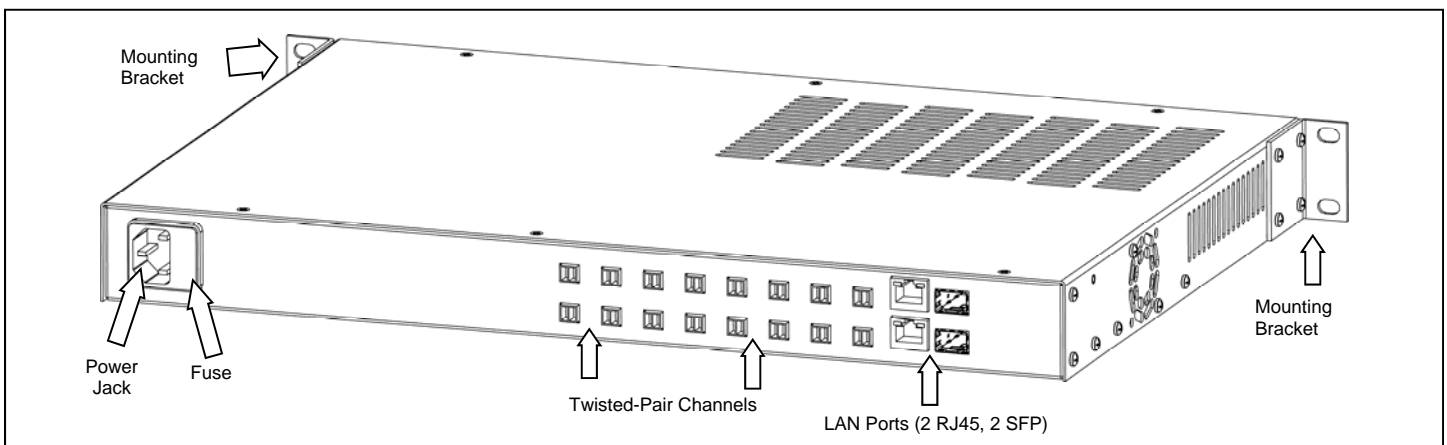
Note: This installation should be made by a qualified service person and conform with local codes.

## Head-end Installation

- 1) The ER851U and ER1651U are rack mountable. When mounting the unit, be sure to follow these guide lines.
  - a. Operating Ambient – Do not install the unit in an assembly where the ambient temperature could exceed 52°C (125°F). NOTE: the ambient temperature in a closed or multi-unit rack assembly could greatly exceed the ambient temperature outside that assembly.
  - b. Air-Flow – Leave space on the sides of the unit for airflow into the cooling fans and some space on top of the unit for air to exit the unit. Adequate air flow is required for safe operation.
  - c. Mechanical Loading – The mounting brackets were designed for two brackets to support one unit. Other configurations, such as mounting other equipment directly on top of the unit or using only one mounting bracket, could cause a hazardous condition due to uneven or excessive mechanical loading.
  - d. Circuit Loading – Do not connect the unit to an electrical supply if the wiring or over current protection of the supply could be overloaded when the ratings listed on the unit are considered.
  - e. Grounding (Earthing) – Reliable earth grounding of rack-mounted equipment should be maintained, use only 3 conductor equipment power cords. If the unit is plugged into a power strip or extension cord, that strip or cord should have a ground (third) pin on its plug.



- 2) Connect up the UTP outputs of the unit. The UTP ports are designed for connection with Twisted Pair cable. Each UTP port is capable of up to 100Mbps of data and will run at the highest possible speed given the wire conditions. It is important that the UTP connections and wire are in good condition. The speed and status of each connection is indicated on the front panel of the unit.



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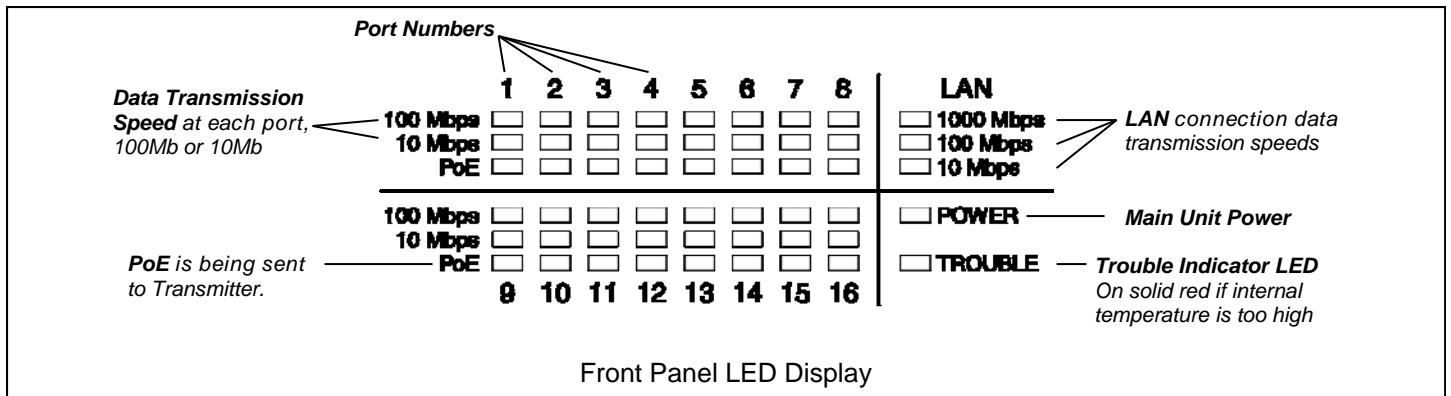
# NITEK®

USA

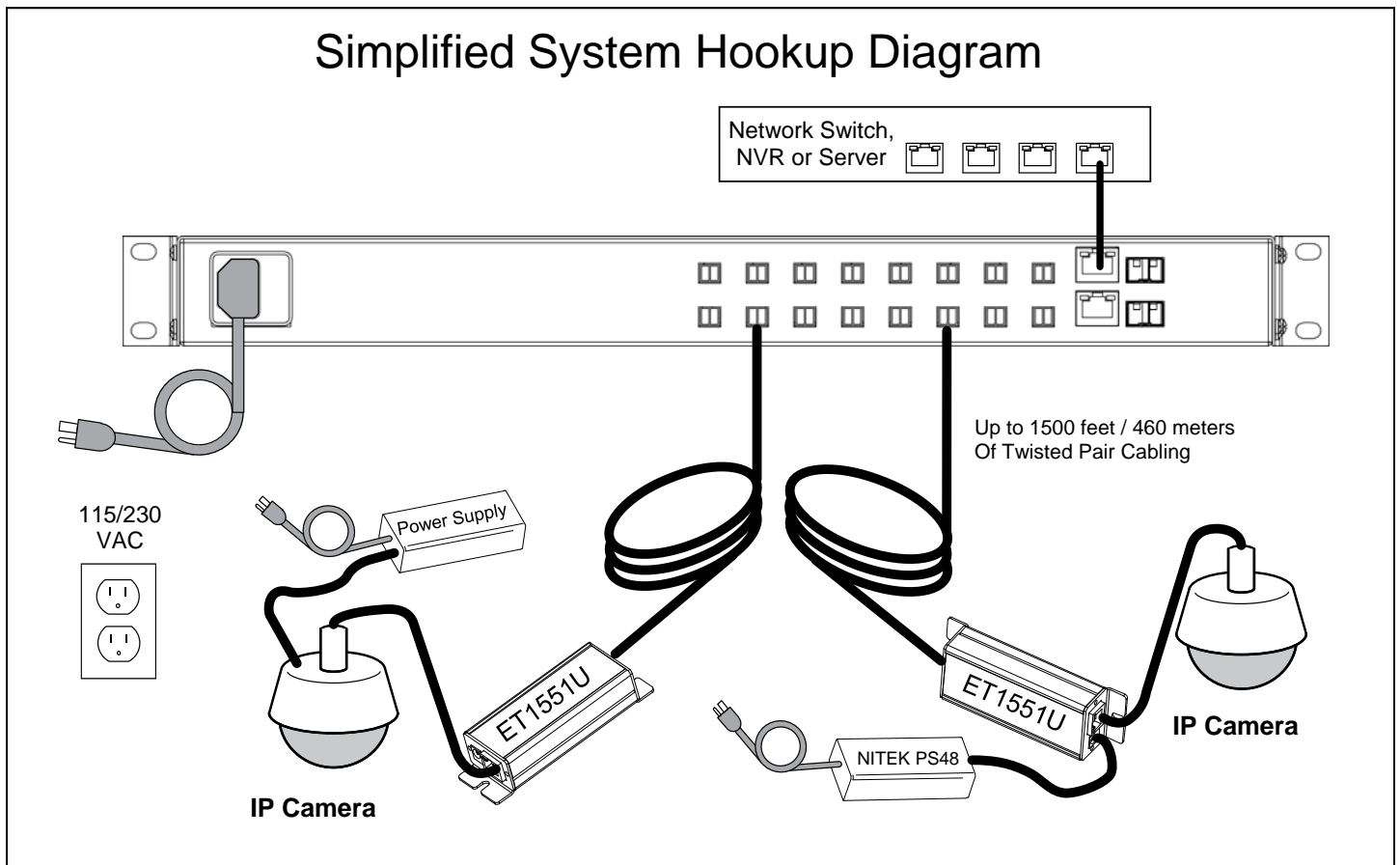
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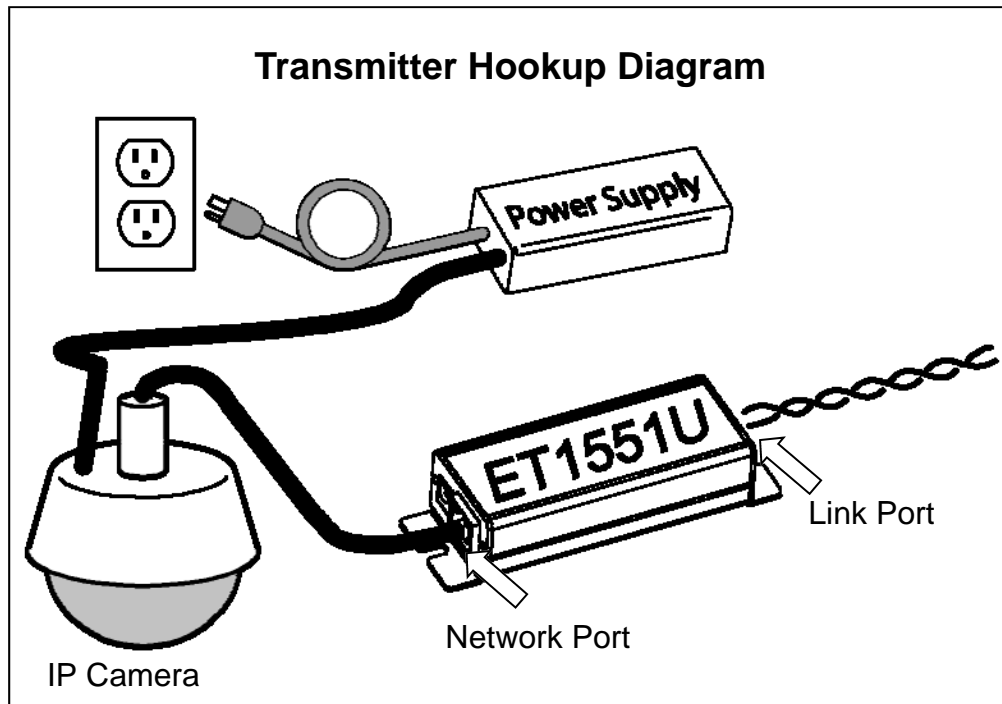
- 3) Connect a LAN port to the network switch. The LAN ports of the ER851U and ER1651U can communicate at up to 1Gbps. The LAN port will automatically sense the connection speed of the network switch. The ER851U or ER1651U will gather data from the 16 transmitter channels and combine them into the LAN ports, which may be connected at a higher speed than the . The data speed for all connected ports is indicated on the front panel LEDs. Make sure your network switch can handle the expected data (i.e. do not use a 100Mb network switch if you expect 300Mbps of data).
- 4) Connect main power to the ER1651U using a proper IEC power cord. A power cord is supplied in the box with your ER851U or ER1651U unit.
- 5) After completing the installation of the head-end equipment, the transmitter units must be installed at the camera/ remote end. NOTE: an Ethernet device other than a camera may be connected at the remote end.



## Transmitter-end Installation ET1551U Units

- 6) At the camera location, securely mount the transmitter.
- 7) Connect the camera or other Ethernet device to the transmitter's "Network Port".
- 8) Find the Twisted Pair cable from the head-end and make sure it is properly terminated. Connect the wires of the Twisted Pair cable to the "Link Port" of the transmitter. If the Head-end unit is powered up it will sense the connection to the transmitter unit and turn on the power. This will be indicated by the green POWER LED on the "Network Port". After several minutes the green 10/100 (upper) LED at the "Link Port" will turn-on to tell you that the Head-end has connected with the transmitter unit. The units take time to power-up and for data to start flowing. The IP camera or other Ethernet device should now be ready to operate. If the camera needs PoE power, please refer to the next section for how to power the ET1551 when PoE power is needed. Otherwise continue installing the remaining transmitters as needed.

**Note:** The Head-end unit is only designed to supply power for the ET1551U transmitter unit. While some cameras at short distances may operate with PoE from the head-end unit, it may be insufficient for proper operation of the device.

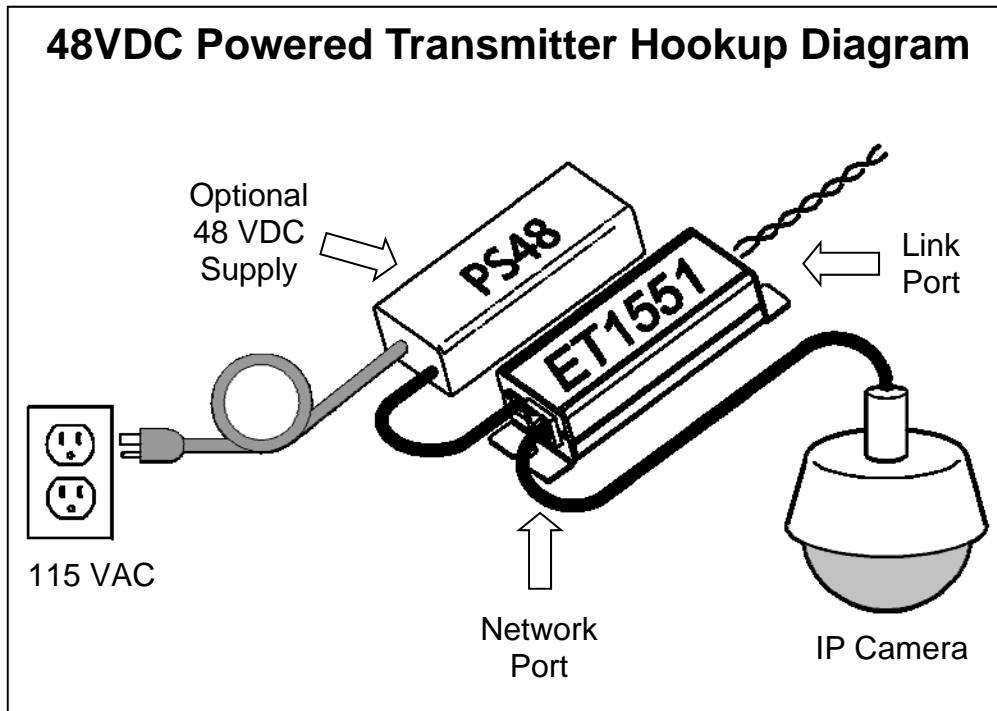


LED INDICATORS				
Connector	LED	OFF	ON	FLASHING
Network Port	Power	No power	Power Good	
	Link Status	No Ethernet Link	Ethernet Link Good	
Link Port	PoE Out	No PoE Power Out	PoE Power Good	
	10/100	No Link	100Mb	10Mb

## Optional Hookup for PoE Devices ET1551U Units

**Note:** This installation is for connecting to devices that do not have their own separate power supply and need to be powered via PoE.

- 9) At the camera location securely mount the ET1551 transmitter. The ET1551 can provide PoE power to operate most IP cameras and other PoE devices. Either use the PS48 Power Supply from Nitek or other 48VDC power supply to operate the units. The illustration below shows the use of the PS48 supply. Other DC power supplies can be used with the supplied power connector if desired, but must be 48 to 56 VDC for proper operation.



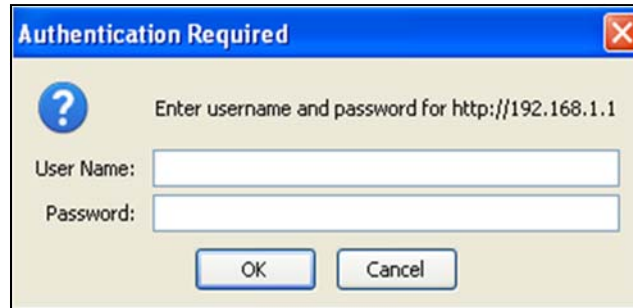
Transmitter used as PoE Injector*	
Distance from Network Port	PoE Device Power Available
33ft/10m	33 watts
328ft/100m	26 watts

\*Results with 48VDC power to the Transmitter optional Power Port

## BROWSER BASED GUI – LOGIN PAGE

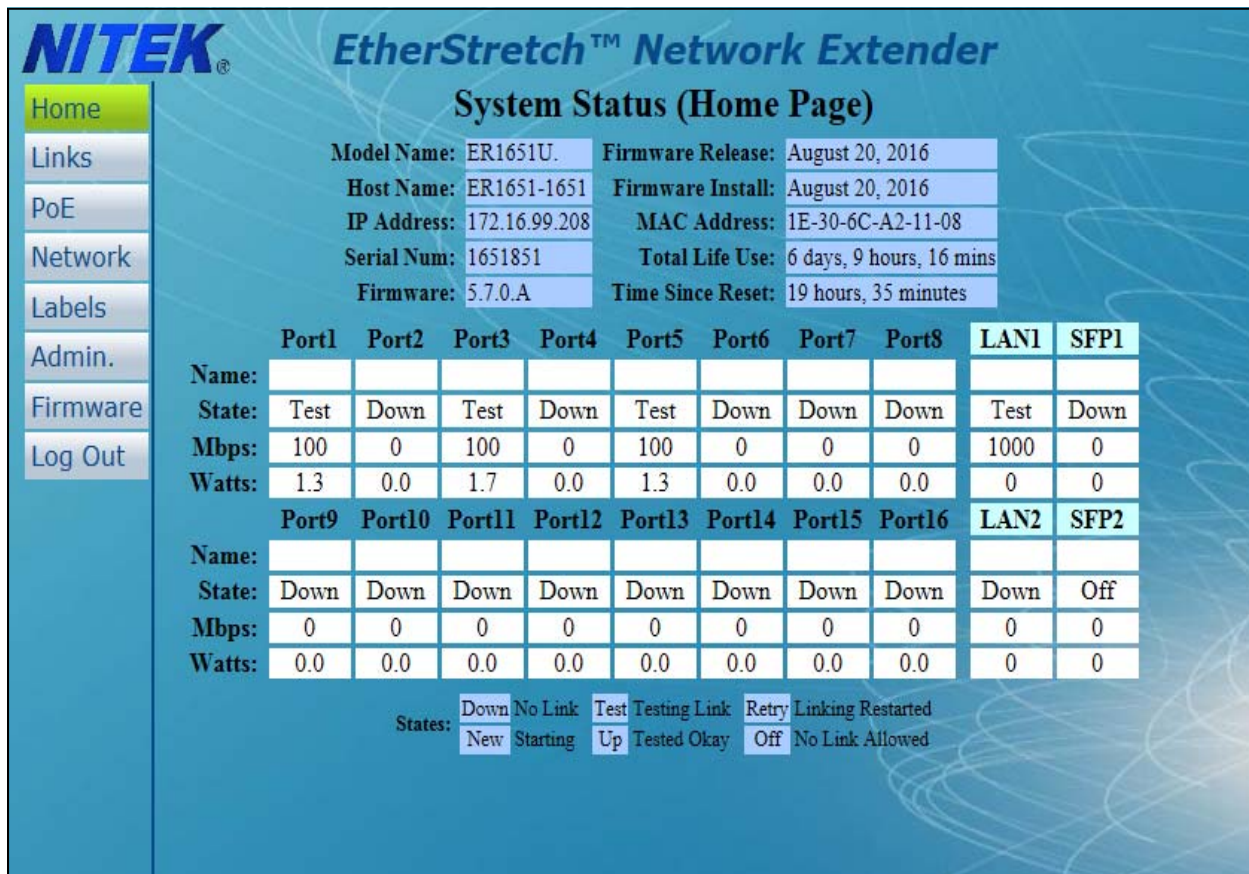
The ER851U and ER1651U do not require a user setup or configuration in order to function when using a single unit. Multiple units do need to be configured to prevent IP address conflicts. The Graphical User Interface (GUI) allows access to additional features to provide for monitoring system and customizing the settings.

In order to access the GUI, connect an Ethernet port of a PC to any port of the ER851U/ER1651U unit. Go into the network setting for your PC and set its IP address to **192.168.1.100** and subnet mask to **255.255.255.0**. Enter “**http://**” and the default IP address of the ER unit, **192.168.1.1**, into your browser as “**http://192.168.1.1**”. The browser will display the login screen below. The default login User Name is “**admin**” with no password.



The image shows a standard Windows-style dialog box titled "Authentication Required". It contains a question mark icon and the text "Enter username and password for http://192.168.1.1". Below this are two input fields: "User Name:" and "Password:". At the bottom are "OK" and "Cancel" buttons.

After login you will come to the **Home** screen shown below. The Home screen provides a look at some basic information about your unit. From here you can see basic information about the status of each port, firmware version, IP address, and MAC address, among other things. There are no settings or controls on this page.



The screenshot shows the NITEK EtherStretch Network Extender System Status (Home Page). The page has a blue background with the NITEK logo and the product name. A left-hand navigation menu includes links for Home, Links, PoE, Network, Labels, Admin., Firmware, and Log Out. The main content area displays system status information in a table format.

		Port1	Port2	Port3	Port4	Port5	Port6	Port7	Port8	LAN1	SFP1
Name:											
State:	Test	Down	Test	Down	Test	Down	Down	Down	Test	Down	
Mbps:	100	0	100	0	100	0	0	0	1000	0	
Watts:	1.3	0.0	1.7	0.0	1.3	0.0	0.0	0.0	0	0	
		Port9	Port10	Port11	Port12	Port13	Port14	Port15	Port16	LAN2	SFP2
Name:											
State:	Down	Down	Down	Down	Down	Down	Down	Down	Down	Down	Off
Mbps:	0	0	0	0	0	0	0	0	0	0	
Watts:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	

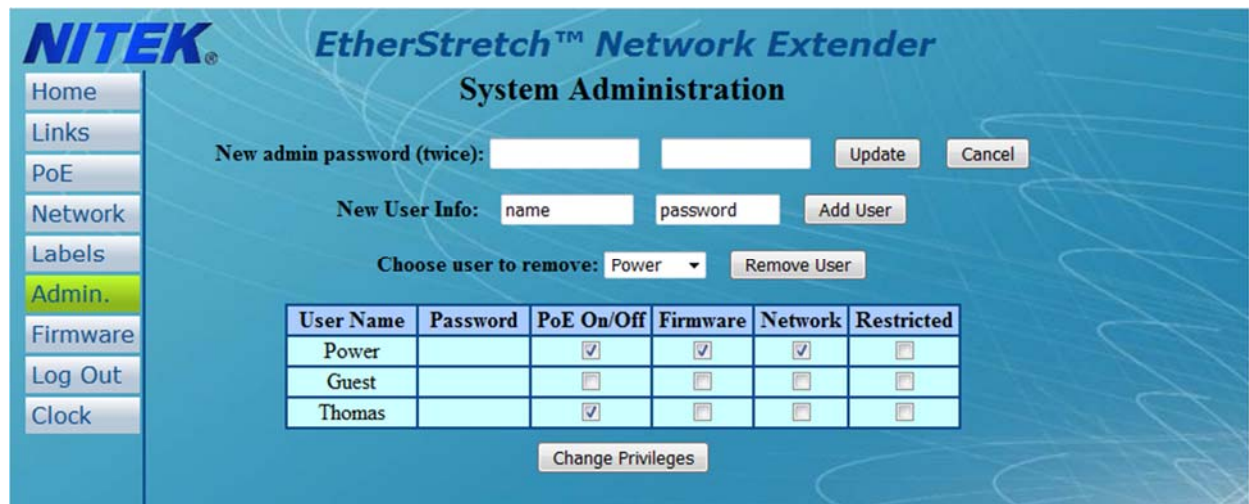
States: Down No Link Test Testing Link Retry Linking Restarted  
New Starting Up Tested Okay Off No Link Allowed



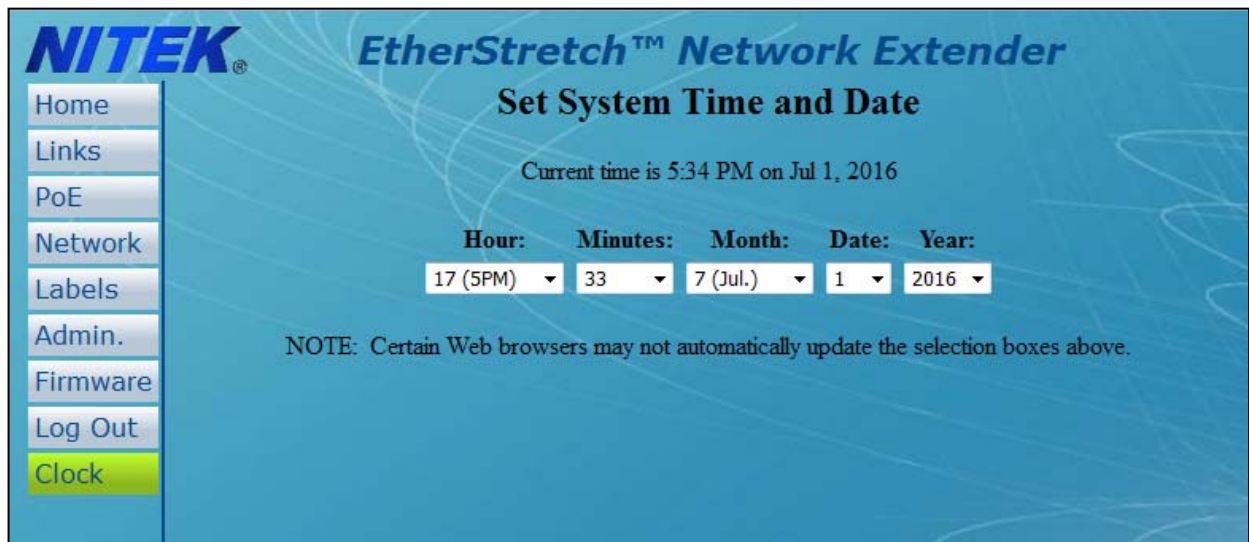
Next, move to the Administrator settings with the **Admin** button. Here you can setup passwords and users. Only the administrator can access this page. Begin by entering a new admin user password. The password can be up to 11 digits. It is case sensitive and may include special characters. Remember to record the admin password, as it is the only way to access the admin screen. After setting the new password you will be forced to login again using the new password. Return to the **Admin** screen and add users as needed.



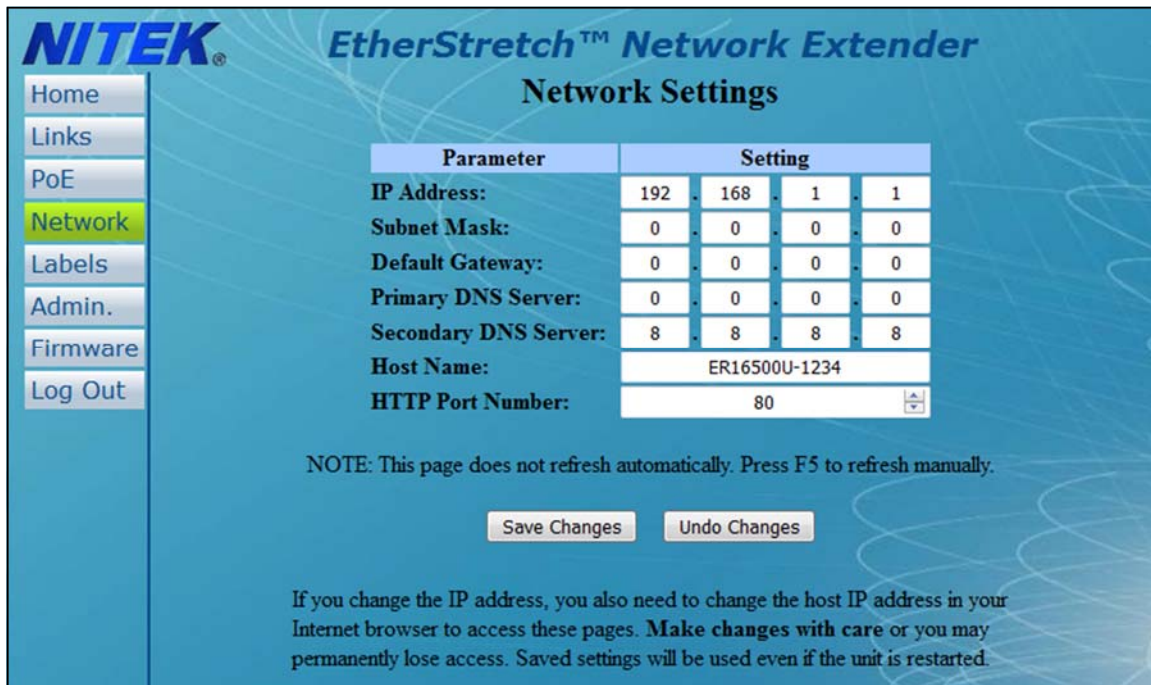
Additional users can be assigned. User names can be up to 9 characters and passwords can be up to 8 characters. For each user you may also select additional rights. "Restricted" will only allow this person to see the Home screen and the Log Out Screen. "POE On/Off" will allow a user to turn off power to individual transmitters and cameras and to make system settings adjustments. This user can cycle camera power, adjust link speeds, and reset the unit. "Firmware" will allow a user to upgrade the firmware and reset the unit. "Network" will allow a user to change network settings for a unit.



Also available only in the **Admin** screen is the **Clock** button. This can be used to set the current time internal to this unit only. Set the current time for the unit in this screen. There is a real time clock in the unit which is battery backed up. It is unlikely that the battery would need to be replaced under normal use, but if it did, the battery type is a standard CR1220. The battery must be replaced by a qualified service tech only.



Next would be setting up the network connection. Select the **Network** button. From the **Network** page you can change the IP address of the unit and the subnet mask along with other settings. Remember, once you change the network address you will have to login to the unit again. If you have multiple units in one installation you will need a unique IP address and host name for each unit. They will operate with the same host name, but can cause confusion for a network administrator. The IP address allows you to access the web interface.



**NITEK** EtherStretch™ Network Extender

### Network Settings

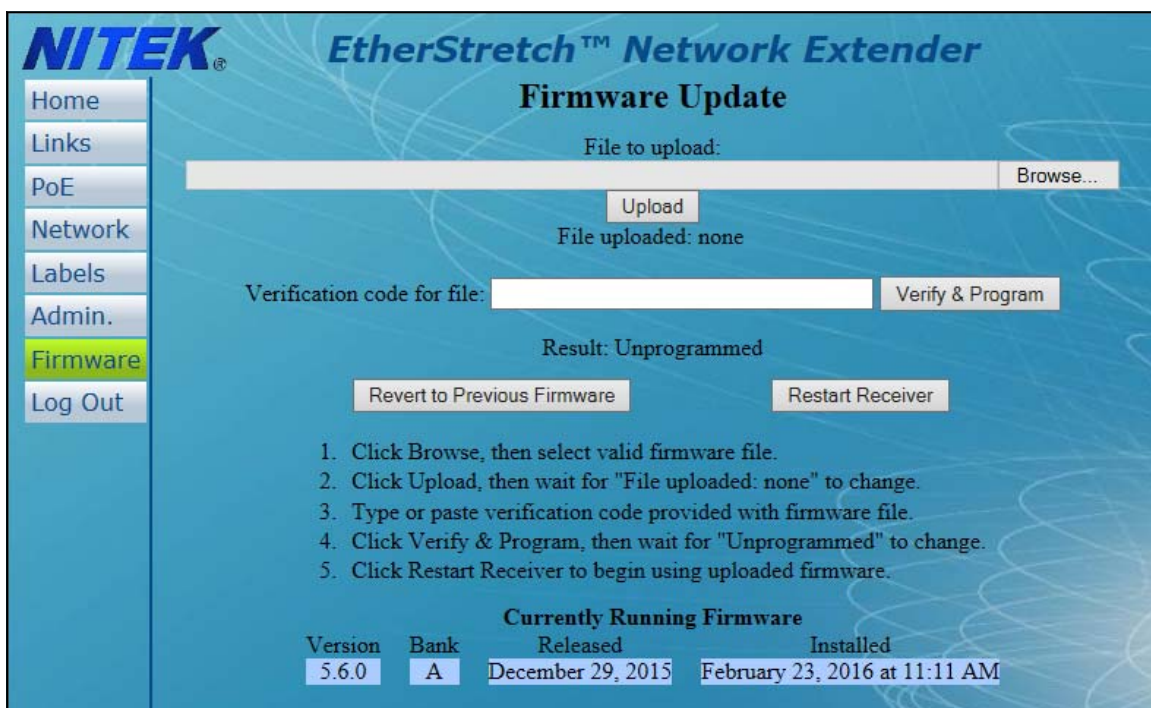
Parameter	Setting			
IP Address:	192	168	1	1
Subnet Mask:	0	0	0	0
Default Gateway:	0	0	0	0
Primary DNS Server:	0	0	0	0
Secondary DNS Server:	8	8	8	8
Host Name:	ER16500U-1234			
HTTP Port Number:	80			

NOTE: This page does not refresh automatically. Press F5 to refresh manually.

Save Changes    Undo Changes

If you change the IP address, you also need to change the host IP address in your Internet browser to access these pages. **Make changes with care** or you may permanently lose access. Saved settings will be used even if the unit is restarted.

Units are shipped from the factory with the most up to date firmware. Firmware is from time to time updated to add features to the unit. These updates are mostly in the form of added features in this webpage interface. Firmware updates will be posted to the Nitek website at [www.nitek.net](http://www.nitek.net) and can be found under the support tab. On the **Firmware** and **Home** pages you can see what firmware version is loaded in your unit and when it was loaded. To update the firmware, download the update to your PC. From the **Firmware Update** page, browse to the update file location on your PC and click the "Upload" button. Next, enter the verification code and select the "Verify and Program" button. When complete, Result will change to "Programmed". You will need to restart the unit in order run the new firmware. Reverting to Previous Firmware will keep all user settings but will change to the previously installed firmware.



**NITEK** EtherStretch™ Network Extender

### Firmware Update

File to upload:  Browse...

Upload

File uploaded: none

Verification code for file:  Verify & Program

Result: Unprogrammed

Revert to Previous Firmware    Restart Receiver

1. Click Browse, then select valid firmware file.
2. Click Upload, then wait for "File uploaded: none" to change.
3. Type or paste verification code provided with firmware file.
4. Click Verify & Program, then wait for "Unprogrammed" to change.
5. Click Restart Receiver to begin using uploaded firmware.

**Currently Running Firmware**

Version	Bank	Released	Installed
5.6.0	A	December 29, 2015	February 23, 2016 at 11:11 AM



Choose the **Links** button to access the **Link Status** page, which is useful in seeing the connections between each of the ports and the connected devices. On this page you can see the link speed for all ports that are operating. The speed will be displayed below each port and in the row marked "Mbps". The speed can be controlled for each of the link ports. It is selected in the "Speed" row. The ports normally operate at 100Mbps but can be changed if a connected device needs a lower speed or if the cable is degraded and causing errors at a higher speed. The speed of the LAN and SFP ports is determined by the connected device. They are normally 1000Mbps but if connected to a lower speed device, they will automatically match the speed of the connected device.

The "Mode" is normally set to automatic. In this mode the system is always checking for communication between connected devices. If there is no communication or a fault is determined the system will attempt to repair the connection. In rare situations some cameras may not be communicating with the server or may not yet be properly setup. This can lead to a false reading. In this rare case Mode may need to be set to DM (Discovery Mode) to allow for cameras to be configured. Once the cameras are properly configured, the setting can be returned to "Auto" (automatic). Mode can also be set to OFF, which will disable the operation of this port.

Finally, State displays the status of the links. State can tell you if all of the IP devices and transmitters at the other ends of the link cables are up and working. If the state is "Down" then no transmitter or IP device is detected. This can be because there is no unit connected or because the cable was damaged or cut. Once a transmitter is detected, the state will become "New". After several seconds, state will show "Test". This means that a transmitter is connected and is in the process of startup. The transmitter in turn attempts to connect to an IP device. If there is no IP device or if the device is not working for some reason, the state will be "Test" or "Retry". This shows that the system is attempting to get an IP device up and working. If all parts of the system are working properly the state will show "Up". This tells you the communication is normal.

**NITEK** EtherStretch™ Network Extender

### Link Status

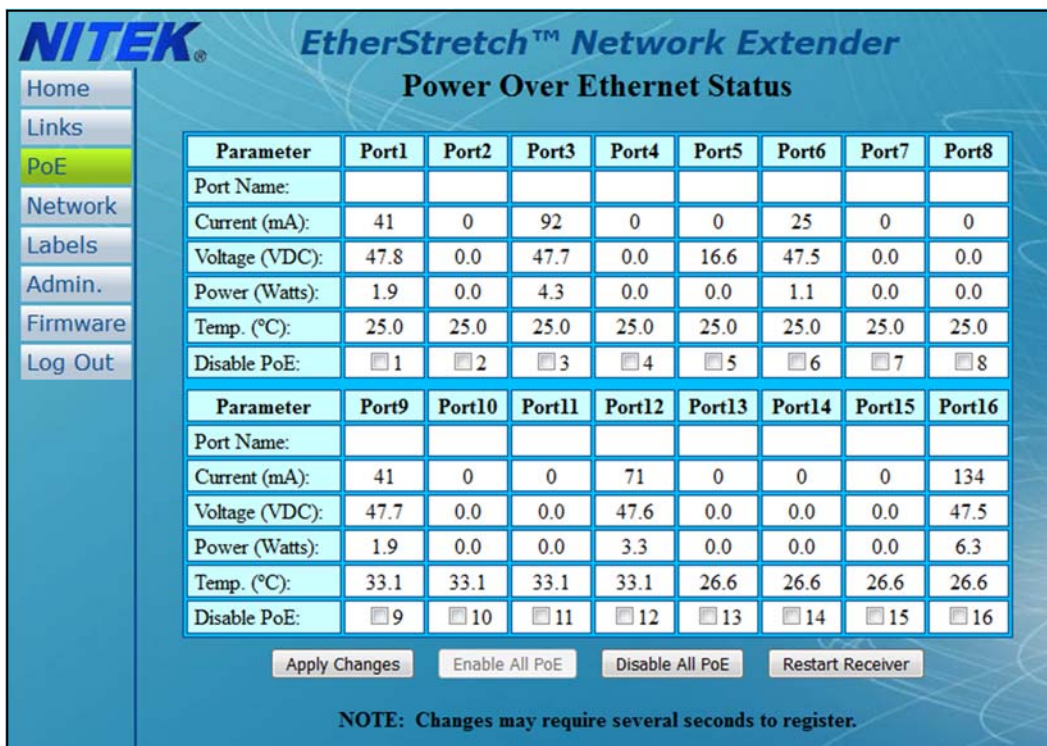
	Port1	Port2	Port3	Port4	Port5	Port6	Port7	Port8	LAN1	SFP1
<b>Name:</b>										
<b>Mbps:</b>	100	0	100	0	100	0	0	0	1000	0
<b>State:</b>	Test	Down	Test	Down	Test	Down	Down	Down	Test	Down
<b>Mode:</b>	D.M. ▾	Auto ▾	D.M. ▾	Auto ▾	D.M. ▾	Auto ▾	D.M. ▾	Auto ▾	Auto ▾	Auto ▾
<b>Speed:</b>	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	1000 ▾	1000 ▾
	Port9	Port10	Port11	Port12	Port13	Port14	Port15	Port16	LAN2	SFP2
<b>Name:</b>										
<b>Mbps:</b>	0	0	0	0	0	0	0	0	0	0
<b>State:</b>	Down	Down	Down	Down	Down	Down	Down	Down	Down	Off
<b>Mode:</b>	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾
<b>Speed:</b>	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	Auto ▾	1000 ▾	Off ▾

States:				Modes:		Speeds (Mbps):			
New	Starting	Down	No Link	Auto	Link Check	1000	10/100/1000	100	100 only
Test	Testing	Retry	Restarted	D.M.	Discovery	Auto	10 if 100 fails	10	10 only
Up	Tested	Off	Disabled		Mode	Off	Disabled	0	Down

Selecting the **POE** button will display power information about each link port. You can see current, voltage and power consumed from each port. Additionally, you can disable POE power out any of the link ports, which will bring the link down. You can see the temperature for each port at the ER851U/ER1651U end. In this screen you can also turn on all of the POE ports or reset the whole unit if needed.





**NITEK** EtherStretch™ Network Extender  
Power Over Ethernet Status

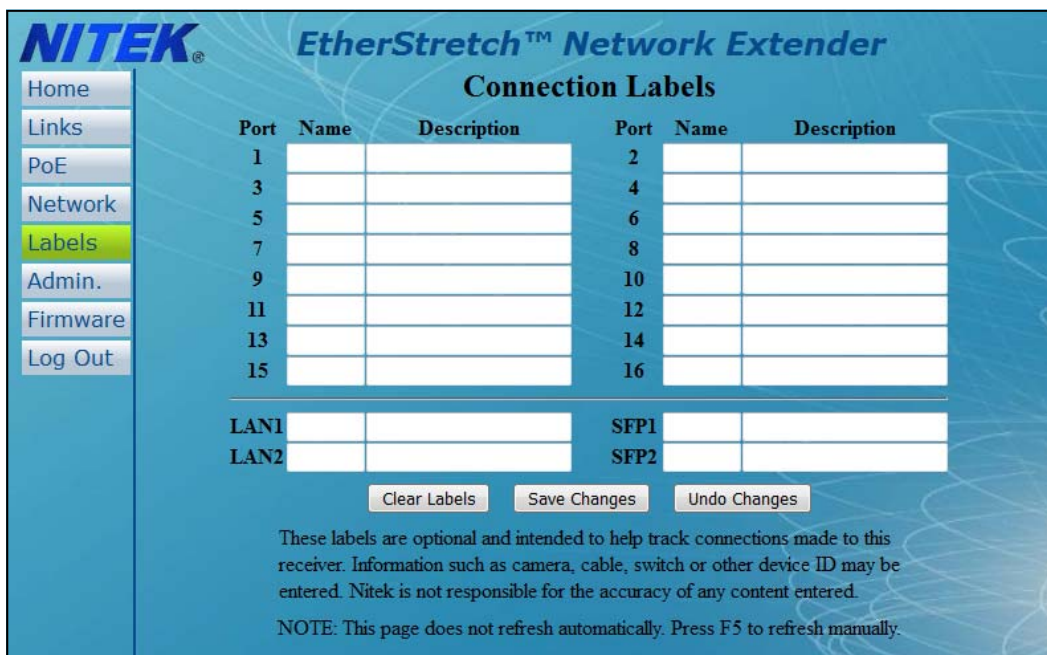
Parameter	Port1	Port2	Port3	Port4	Port5	Port6	Port7	Port8
Port Name:								
Current (mA):	41	0	92	0	0	25	0	0
Voltage (VDC):	47.8	0.0	47.7	0.0	16.6	47.5	0.0	0.0
Power (Watts):	1.9	0.0	4.3	0.0	0.0	1.1	0.0	0.0
Temp. (°C):	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Disable PoE:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8

Parameter	Port9	Port10	Port11	Port12	Port13	Port14	Port15	Port16
Port Name:								
Current (mA):	41	0	0	71	0	0	0	134
Voltage (VDC):	47.7	0.0	0.0	47.6	0.0	0.0	0.0	47.5
Power (Watts):	1.9	0.0	0.0	3.3	0.0	0.0	0.0	6.3
Temp. (°C):	33.1	33.1	33.1	33.1	26.6	26.6	26.6	26.6
Disable PoE:	<input type="checkbox"/> 9	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13	<input type="checkbox"/> 14	<input type="checkbox"/> 15	<input type="checkbox"/> 16

Apply Changes   Enable All PoE   Disable All PoE   Restart Receiver

**NOTE: Changes may require several seconds to register.**

The **Labels** button takes you to the screen where you can apply custom labels to the inputs. These labels will be displayed below the port number on several screens, include the Home, Links and PoE screens.



**NITEK** EtherStretch™ Network Extender  
Connection Labels

Port	Name	Description	Port	Name	Description
1			2		
3			4		
5			6		
7			8		
9			10		
11			12		
13			14		
15			16		

LAN1		SFP1	
LAN2		SFP2	

Clear Labels   Save Changes   Undo Changes

These labels are optional and intended to help track connections made to this receiver. Information such as camera, cable, switch or other device ID may be entered. Nitek is not responsible for the accuracy of any content entered.

**NOTE: This page does not refresh automatically. Press F5 to refresh manually.**

When finished with the web interface, it is important to close your browser completely. Some browsers keep cookies and will not fully disconnect until the browser is closed.



**NITEK** EtherStretch™ Network Extender  
Login / Logout

You are currently logged in as: admin

You must log in as valid user to access any of these pages.

You must completely close your browser to log out from this session.

You must completely close then reopen your browser to log in as different user.