Installation and Operation Manual

For Models ER8500C and ER16500C

IMPORTANT SAFTY INSTRUCTIONS

- Read all safety instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with a dry cloth.
- Refer all servicing to qualified service personnel.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.

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

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

Patent Pending USA and Europe
Euro Pat App 2779641

681200113

12182014

NITEK®

USA

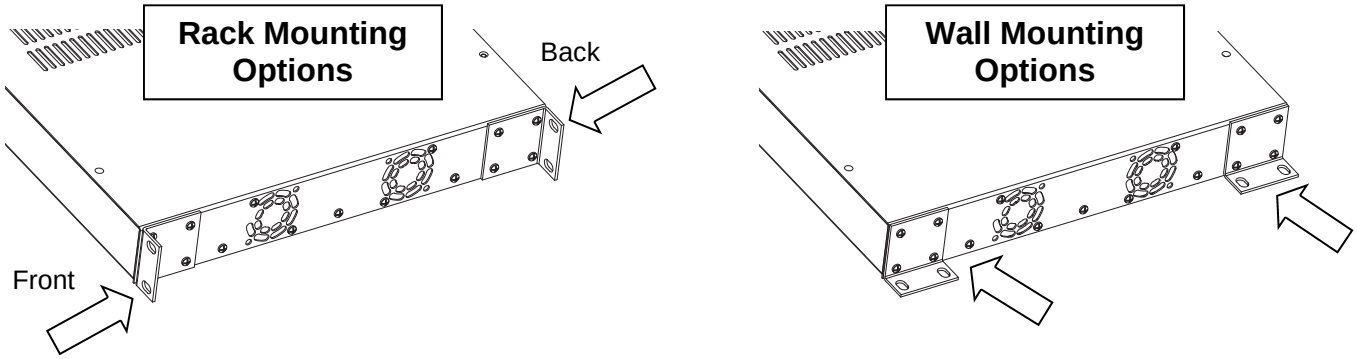
5410 Newport Drive, # 24
Rolling Meadows, IL 60008
Phone: (847) 259-8900
Fax: (847) 259-1300
E-mail: info@nitek.net
WWW.NITEK.NET

EUROPE

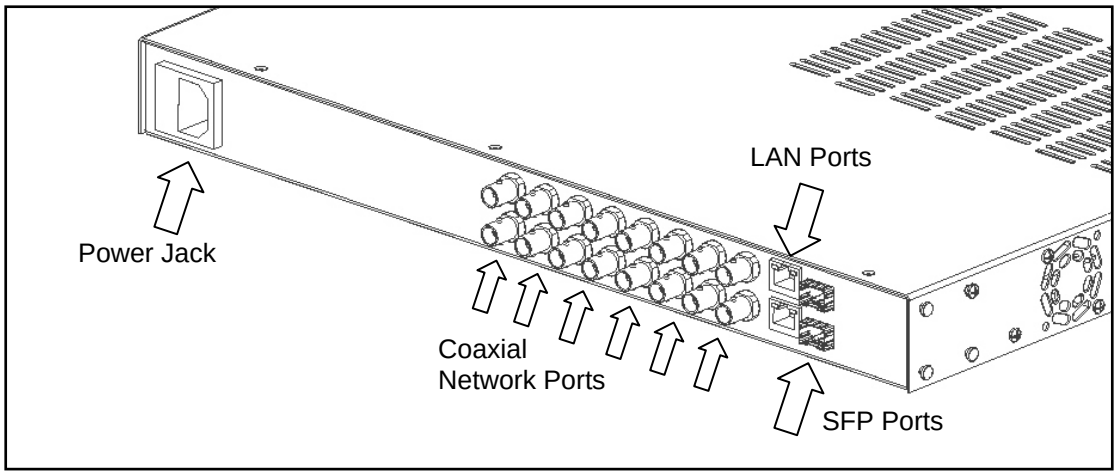
De Aar 99
8253 PN Dronten
The Netherlands
Tel: +31(0) 321 310 043
E-mail: info@nitekeurope.net
WWW.NITEK.NET

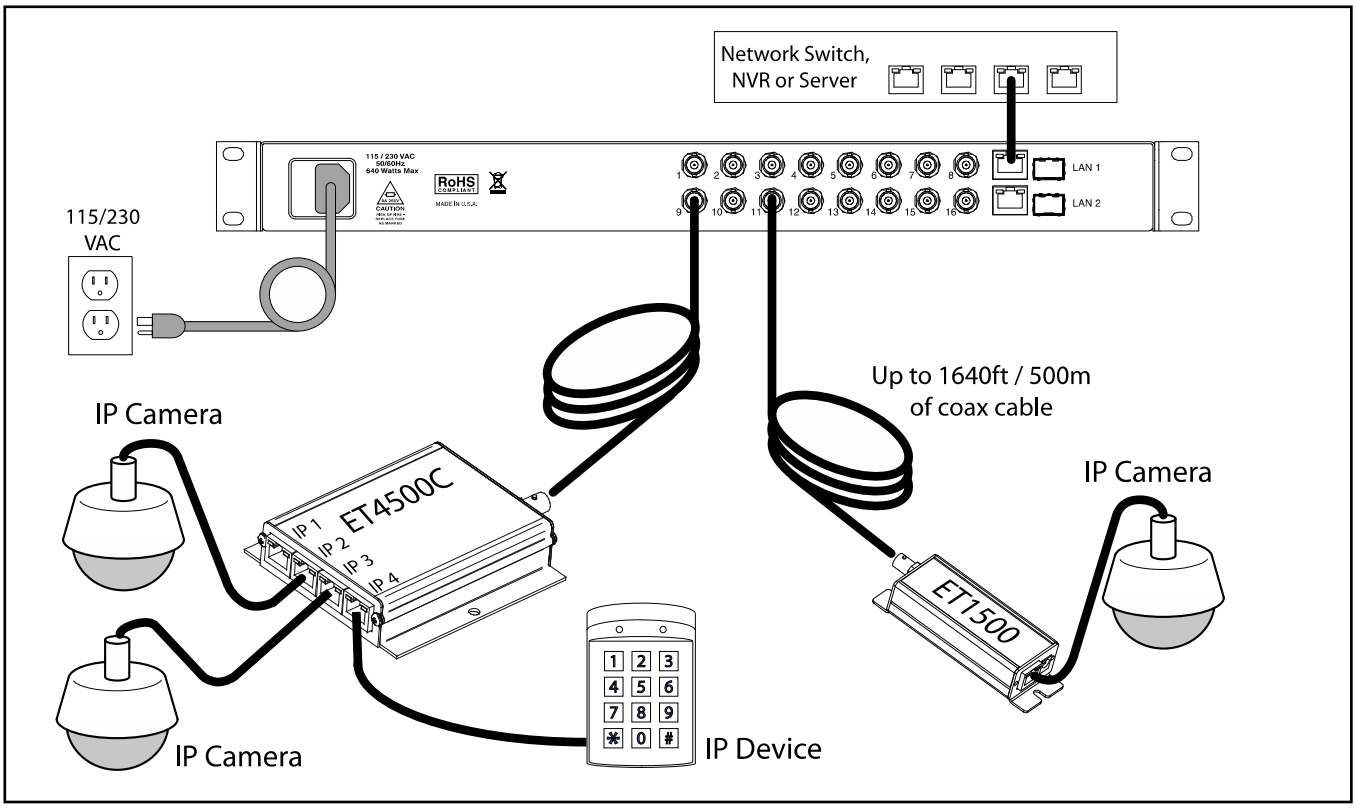
Head-end Installation
ER8500C and ER16500C

1) The ER8500C / ER16500C can be rack mounted, wall mounted or used as desk top unit. Use the included mounting ears in the front or back of the unit depending on your needs. The mounting ears can also be turned to the bottom of the unit for wall mounting if needed. 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 ears were designed for two ears to support one unit. Other configurations, such as mounting other equipment directly on top of the unit or using only one mounting ear, 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 coaxial outputs of the unit. The coaxial ports are designed for connection with 75 ohm solid copper coaxial cable, commonly RG-59 or RG-6. The coaxial port is a 100Mb network port. It is important that the coaxial connectors be in good condition. The speed of the connection and POE status is indicated on the front panel of the unit. A transmitter must be connected to the other end of the coaxial cable for the connection speed to be indicated and for the POE to turn ON.

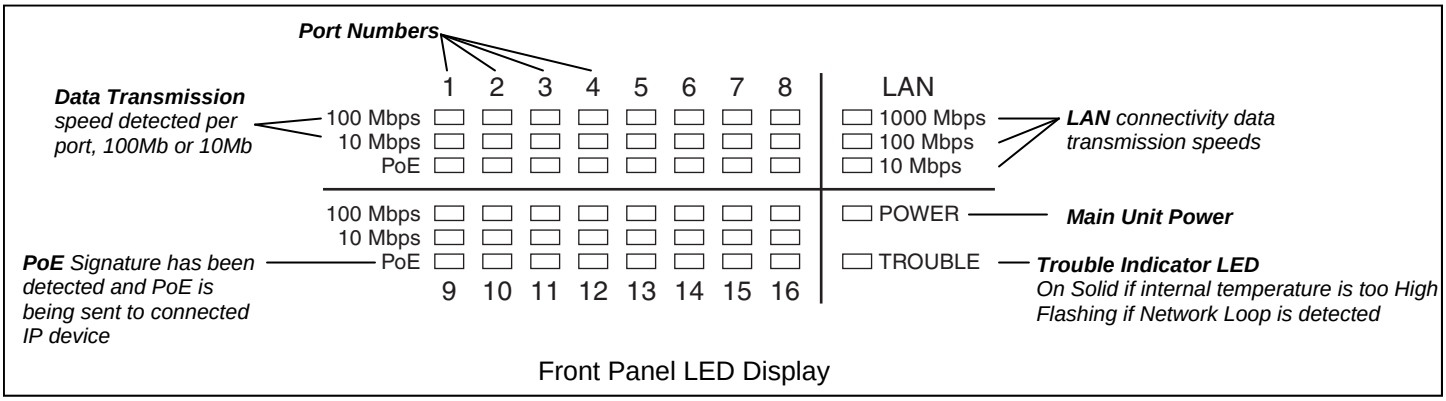




3) Connect the LAN port to the network switch. The LAN ports of the ER8500 / ER16500 can communicate at 1Gbps. The LAN port will automatically sense the connection speed of the connected network device. The LAN port is NOT POE capable, only the coaxial ports can provide power to connected devices. The LAN jack of the ER8500 / ER16500 will gather data from the coaxial ports and combine it into the higher speed LAN ports. The ER16500 is a Layer 2 switch with 2 LAN ports. For most applications using a single LAN port, which provides a gigabit of bandwidth, will be the easiest and best solution. Also commonly done is to use the additional LAN port to chain two or more ER16500 units together. This will provide a way to bring 32 cameras or more into a single NIC of a NVR unit. Additionally you must be aware that in some more complex network configurations loops can be created. Such conditions can cause data to cascade and therefore bring down a network. The ER16500 has special LED indicators to inform you if this is occurring. If the Trouble LED is flashing slowly it will indicate that the network has a loop in it and data is cascading. It is recommended to remove the second LAN jack if this occurs and see if the problem goes away. The data speed for all connected ports is indicated on the front panel LED. 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) A main power outlet shall be installed near to the equipment and easily accessible. Connect main power to the ER8500 / ER16500 using a proper IEC power cord. A power cord is supplied in the box with your ER8500 / ER16500 unit. Disconnect main power before removing cover.

5) After completing the installation of the Head-end equipment, the transmitter units must be installed at the camera/ remote end.



Front Panel LED Display

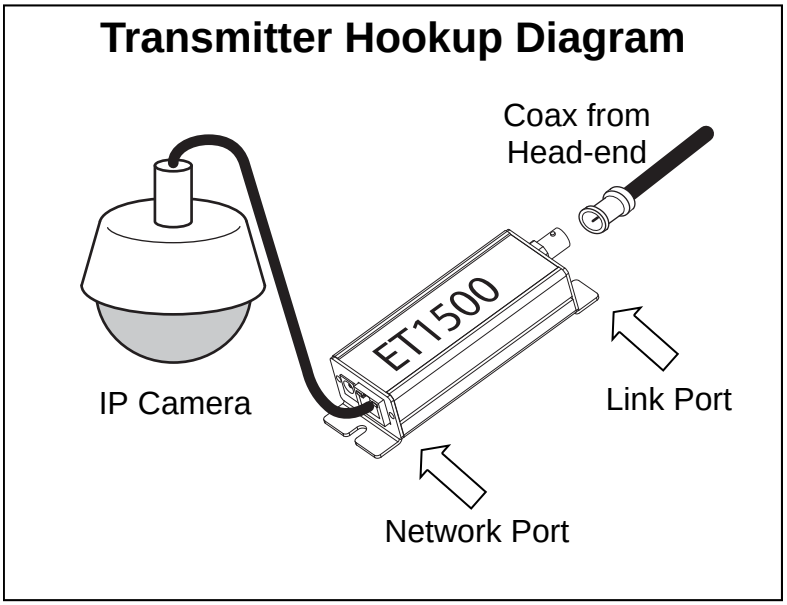
Transmitter-end Installation
ET1500C or ET4500C Units

6) At the camera location securely mount the transmitter.

7) Find the coaxial cable from the head-end and make sure it is properly terminated RG59 or RG6 (75 ohm type) solid copper cable. Connect coaxial cable to the BNC jack of the transmitter. If the head-end unit is powered up it will sense the connection of the transmitter unit and turn on the power. This will be indicated by the green POWER LED on the “Network Port”. After about 15 to 30 seconds the green 10/100 (upper) LED at the “Coax Port” will turn-on to tell you that the head-end has connected with the transmitter unit. The Ethernet device does not need to be connected for the transmitter to communicate with the head-end.

8) Finally, connect an Ethernet device to the transmitter “Network Port”. If the device requires PoE power, the POE OUT (lower) LED at the “Coax Port” will turn on followed by the LINK STATUS LED on the “Network Port”. The IP camera or other Ethernet device should now be ready to operate. Continue installing the remaining transmitters as needed.

Transmitter Hookup Diagram

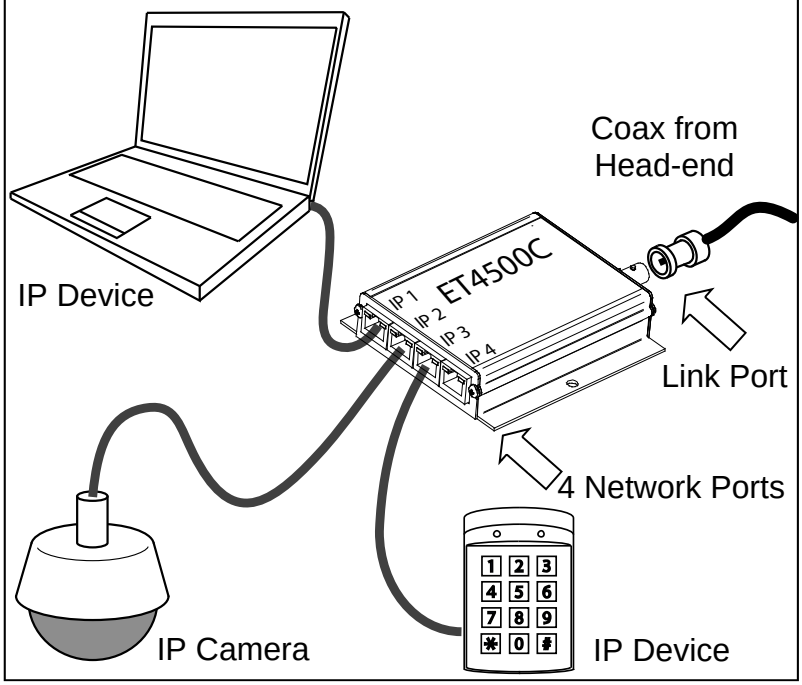


PoE Device Power RG59 Coax *	
Distance	**Power at PoE Port**
328ft/100m	21.7 watts
656ft/200m	21.7 watts
984ft/300m	18.2 watts
1312ft/400m	14.4 watts
1640ft/500m	12.2 watts

*Results with ER8500 Receiver and using RG59 SBC Type Cable with 20AWG Center

ET1500C 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

4CH Transmitter Hookup Diagram



ET4500C LED INDICATORS				
Connector	**LED**	**OFF**	**ON**	**FLASHING**
Network Port	PoE Out	No PoE Power Out	PoE Power Good	
	Link Status	No Ethernet Link	Ethernet Link Good	
Link Port	Power	No Power	Power Good	
	10/100	No Link	100Mb	10Mb

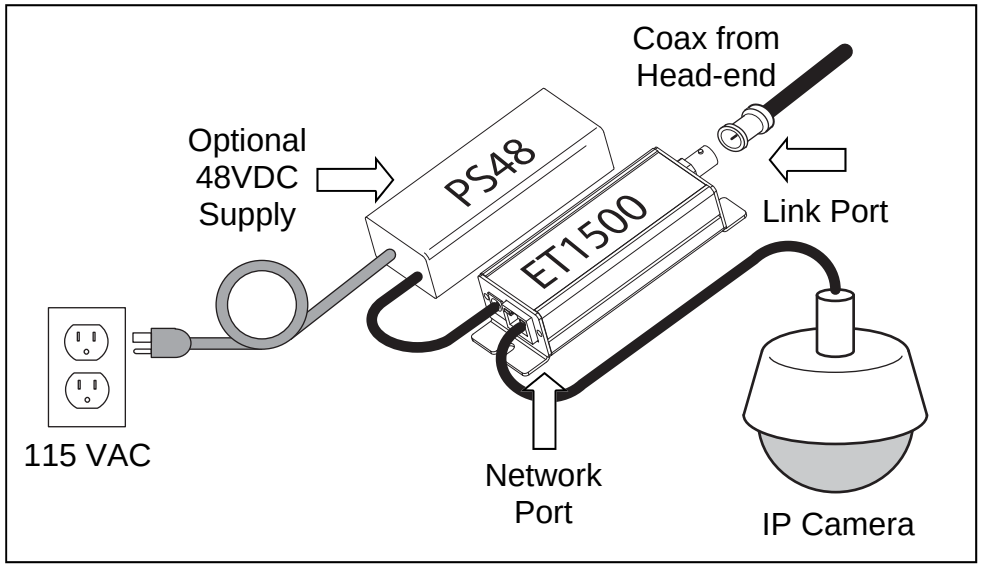
Optional Hookup for High Power PoE Devices
ET1500C or ET4500C Units

9) In some cases the PoE device connected at the transmitter end needs more power than can be supported over a long coaxial run. You can usually identify these cases by watching the POWER LED of the transmitter, located on the "Network Port". If the power light cycles ON for less then 1 second and then is off for 3 or 4 seconds when the PoE device is connected, but it turns ON and operates normally without a PoE device connected, this would indicate you are having a current limit problem.

10) You should first check the power requirements of the PoE device. Also check the length of the coaxial cable. The POE POWER CHART on the previous page will indicate the maximum power available for your length of coax.

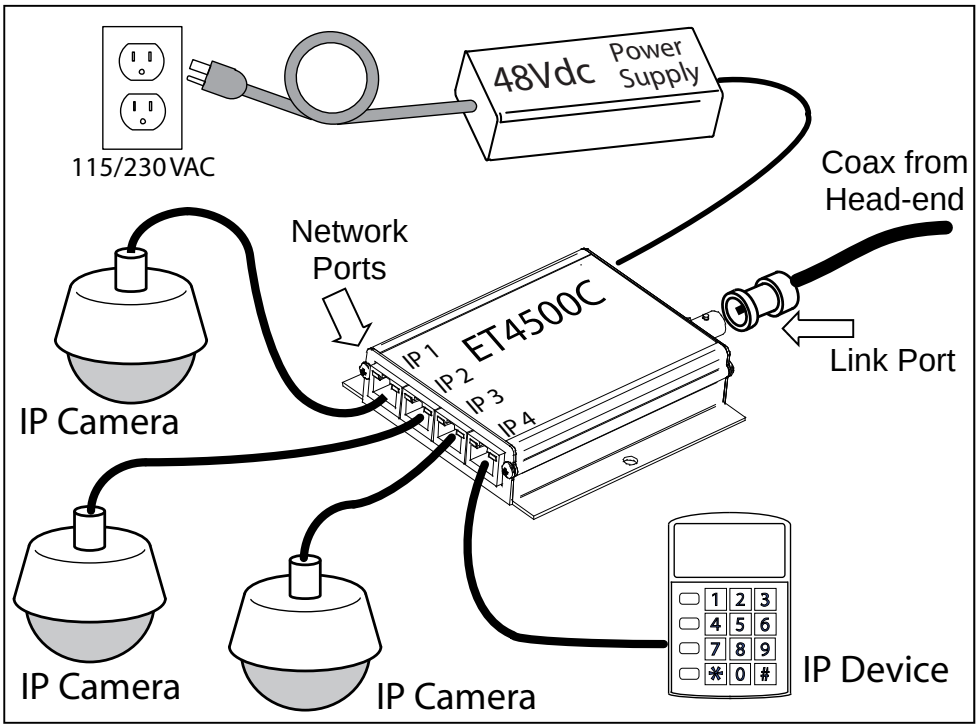
11) If the needed level of power is not available for the length of coaxial cable, alternate options are available. One method is to directly power the transmitter with a 48VDC power supply as shown below (Nitek# PS48). When powered directly from a 48VDC supply the transmitter can deliver full 802.3AT power regardless of the coaxial cable length plus an additional length of up to 100 meters of network cable.

48VDC Powered Transmitter Hookup Diagrams



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

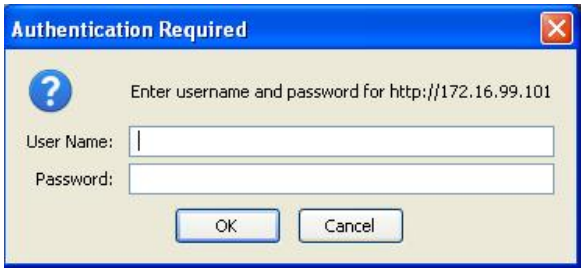
*Results with 48VDC power to the Transmitter optional Power Port



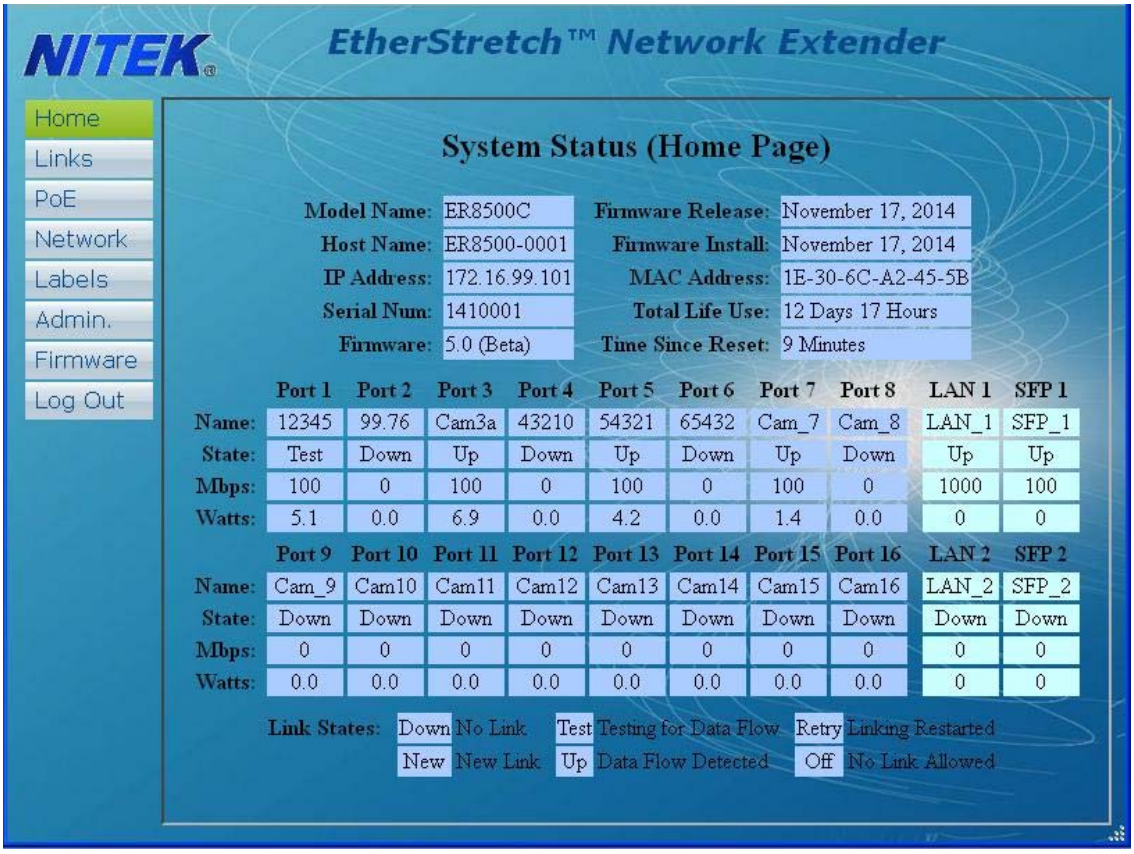
BROWSER BASED GUI – LOGIN PAGE

The ER8500C and ER16500C 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, which could occur. The Graphical User Interface (GUI) provide access to additional features to provide for monitoring of the system and customizing of the settings.

In order to connect with the unit, connect an Ethernet port of a PC to any port of the ER8500/ER16500 unit. Go into the network setting for your PC and set its address to **192.168.1.100** and a subnet mask of **255.255.255.0**. The default IP address of the ER unit is **//192.168.1.1**, enter the address of **//192.168.1.1** into your Browser. The unit will display a login screen below. The default login is Name; "**admin**" with not password.

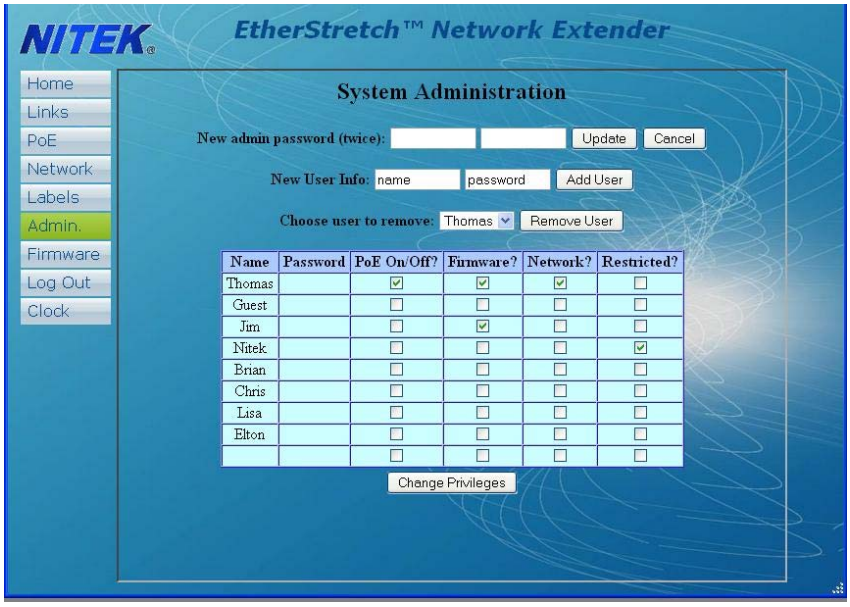


After login you will come to the **HOME** screen shown below. The Home screen provides a look at some basic information about your unit. From here you can see basic information about the status of each port, current firmware, IP address, and MAC address among other things. There are no settings or controls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

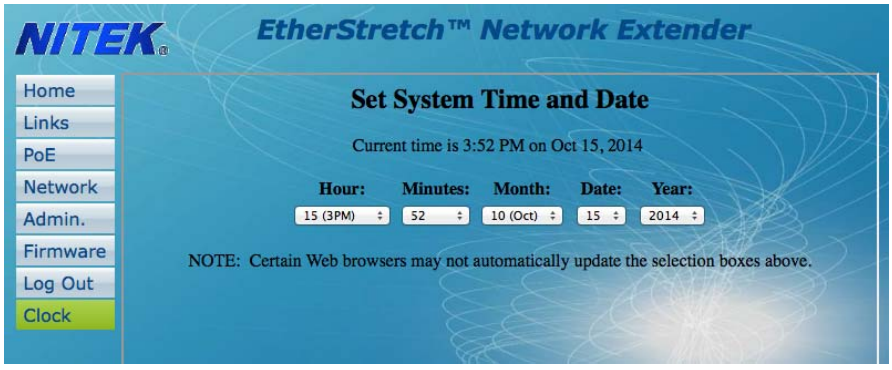


Next move to the Administrator settings with the **ADMIN** button. Here you can setup passwords and users. Only the administrator can access this page. Begin by entering a new admin user password. The password can be up to 11 digits; it is case sensitive and may include special characters. Remember to 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.

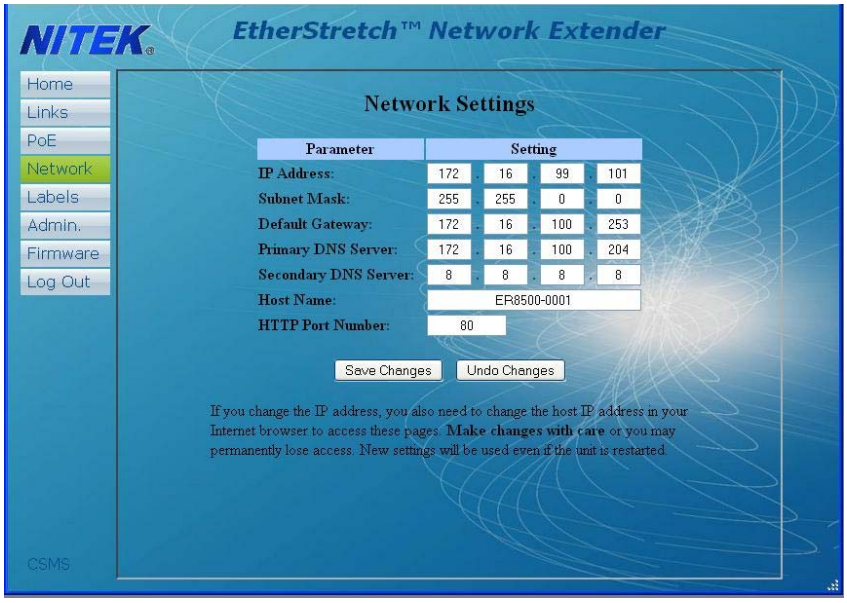
Additional users can be assigned. User names can be up to 9 characters and a password can be up to 8 characters. For each user you may also select additional rights. “Restricted” will only allow this person to see the Home screen and the Log Out Screen. “POE On/Off” will allow a user to turn off power 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.



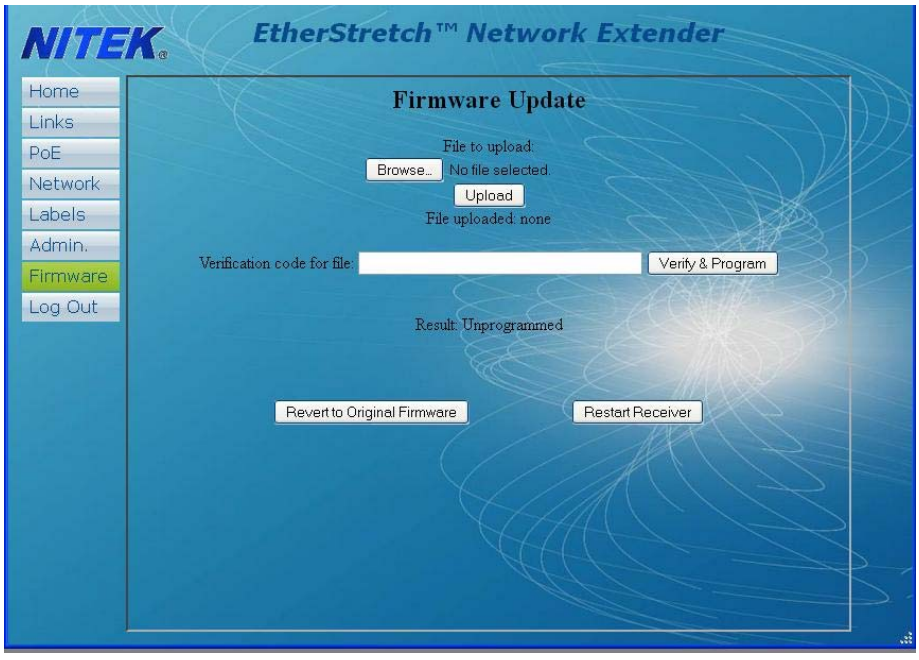
Also available only in the ADMIN screen is the CLOCK button. This can be used to set the current time internal to this unit only. Set the current time for the unit in this screen. There is a real time clock in the unit which is battery backed up. It is unlikely that the battery would need to be replaced 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 within 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 again to the unit. If you have multiple units in one installation you will need a unique IP address and host name for each unit. It will operate with a single host name but can cause confusion for a network administrator. The IP address allows you to access the web interface.



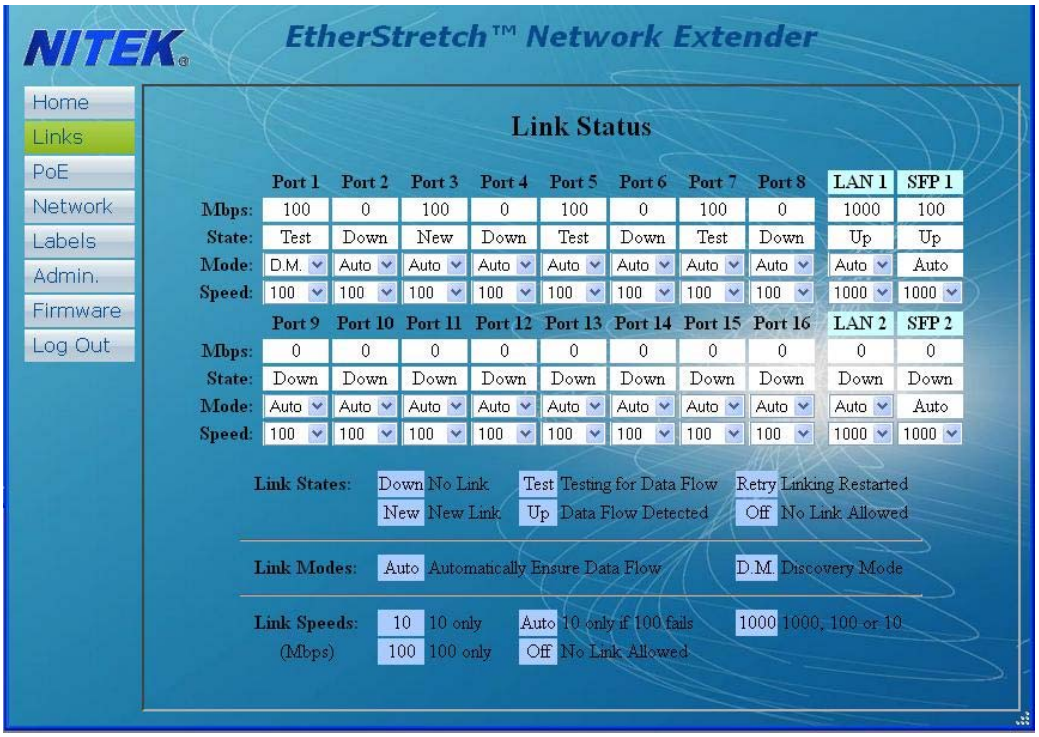
Units are shipped from the factory with the most up to date firmware. Firmware is from time to time updated to add features to the unit. These updates are mostly in the form of added features in this webpage section. Firmware updates will be posted to the Nitek website at www.nitek.net and can be found under the support tab. In the home screen page you can see what firmware version is loaded in you unit and when it was loaded. To update the firmware, down load 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 the Result will change to “programmed”. You will need to reset the unit in order the have the code take effect. Reverting to Factory Installed Firmware will keep all user settings but will change to the original firmware.



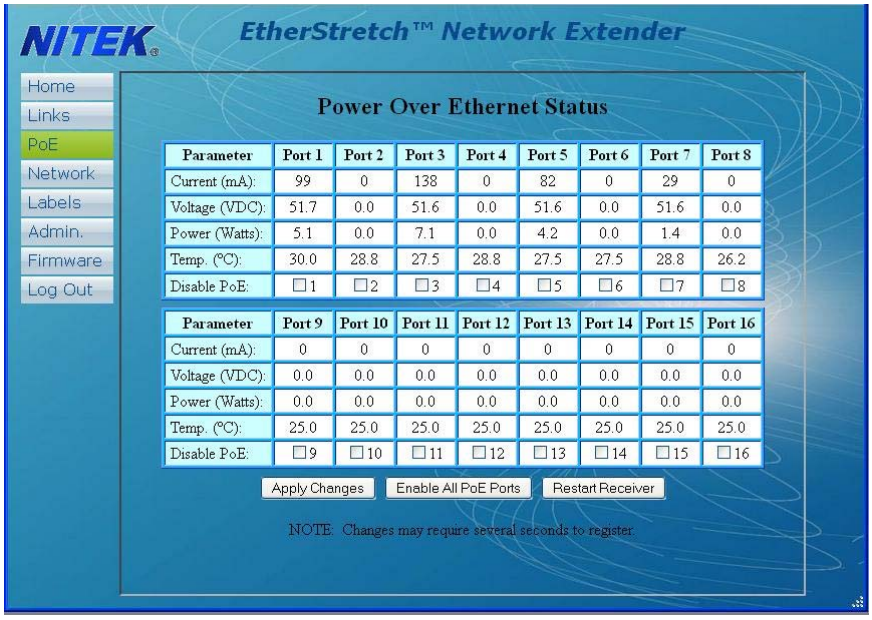
The “Links” page is useful in seeing the connections between each of the ports and the connected device. From within this page you can see the link speed for all ports that are operating. The speed will be displayed below each port and in the row marked “Mbps”. The speed can be controlled for each of 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, this will disable the operation of this port.

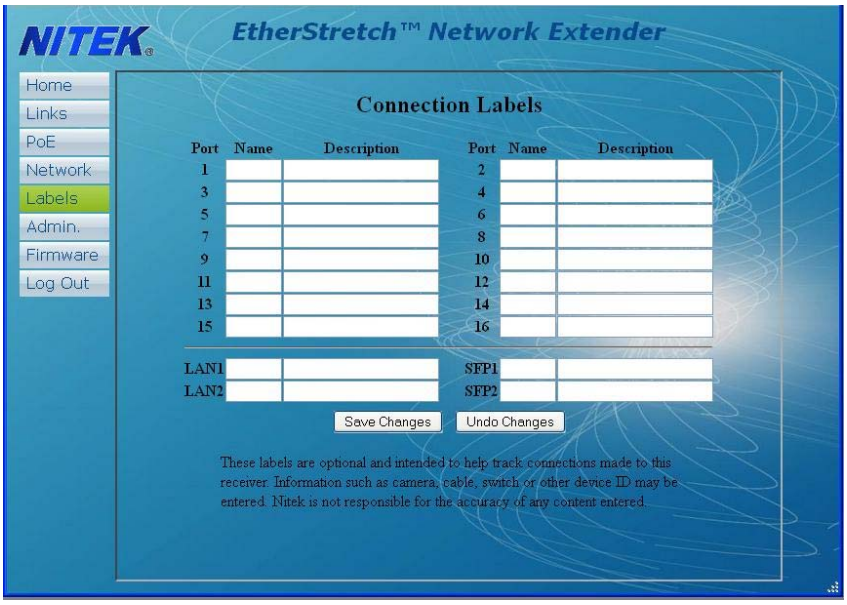
Finally the State displays the status of the links. There is a transmitter unit at the other end of each coaxial cable run. The transmitter in turn is connected to a camera or other Ethernet device. State can tell you if all of the devices are up and working. If the state is “Down” then no transmitter is detected. This can be because there is no unit connected or maybe the coax was damaged or cut. Once a transmitter is detected the state will become “New”. After a very short period 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.



Selecting the POE button will display power information about each port. You can see current, voltage and power consumed from each power. Additionally, you can disable POE power out any of the ports which will being the link down. You can see the temperature for each port at the ER8500C/ER16500C end. In this screen you can also turn on all of the POE ports or reset the whole unit is needed.



The Labels button takes you the screen where you can apply a custom label to the inputs. This label will be displayed below the port number on the Home screen.



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