INSTALLATION GUIDE

EL1551U
IP Video Camera Over Single Twisted Wire
Ethernet Extender with EtherStretch

Description

The **EL1551U** is another component of the NITEK **EtherStretch** line. This Environmentally hardened **EtherStretch** solution allows for the utilization of existing cable infrastructure (coax or UTP) to transmit data from IP cameras and other network devices along with PoE power to operate these networked devices well beyond standard network limitations. The **EL1551U** can extend Ethernet to over 460m or 1500ft of single twisted pair wire making the **EL1551U** is ideal for retrofitting existing installations.

The EL1551U system consists of a transmitter and a receiver unit that require very little installation time and no set up or configuration. The system quickly turns any ordinary single twisted pair wire into a high speed network communication for distances up to 460 meters or 1500 ft.

The EL1551U is completely transparent to the network thus requiring no IP or MAC addressing. Simply connect your network devices to the networking port of the transmitter and receiver units and use the with existing cabling infrastructure. LED indicators show the status of the network communications and PoE power.

The NITEK **EtherStretch** EL1551U reliably extends network communications and overcomes cable distance limitations offering connectivity to devices in locations traditional networking does not allow. The units are constructed of industrial grade RoHS compliant plated aluminum with a corrosion resistant finish makes them extremely durable.

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E325724
I.T.E.

CE

RoHS COMPLIANT 2002/95/EC

06072013

IEC/UL 60950-1

NITEK®

Important Safety Instructions

Read all Safety Instructions.

Keep the Instructions for future reference.

Be sure to HEED all Warnings.

Follow ALL instructions.

DO NOT use this device or any of the equipment described, near water.

Clean this device ONLY with a dry cloth.

DO NOT block any ventilation openings.

Install in accordance with the manufacturer's instructions.

DO NOT install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.

DO NOT defeat the safety purposes of polarized or grounding type plugs. A polarized plug has two blades, with one blade wider than the other. A grounding plug has two blades and has a third grounding prong. The wide blade and the grounding prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

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.

Protect the power cord from being walked on or pinched especially at plugs, convenience receptacles and other points where they exit from the device.

Only use attachments and/or accessories specified by the manufacturer.
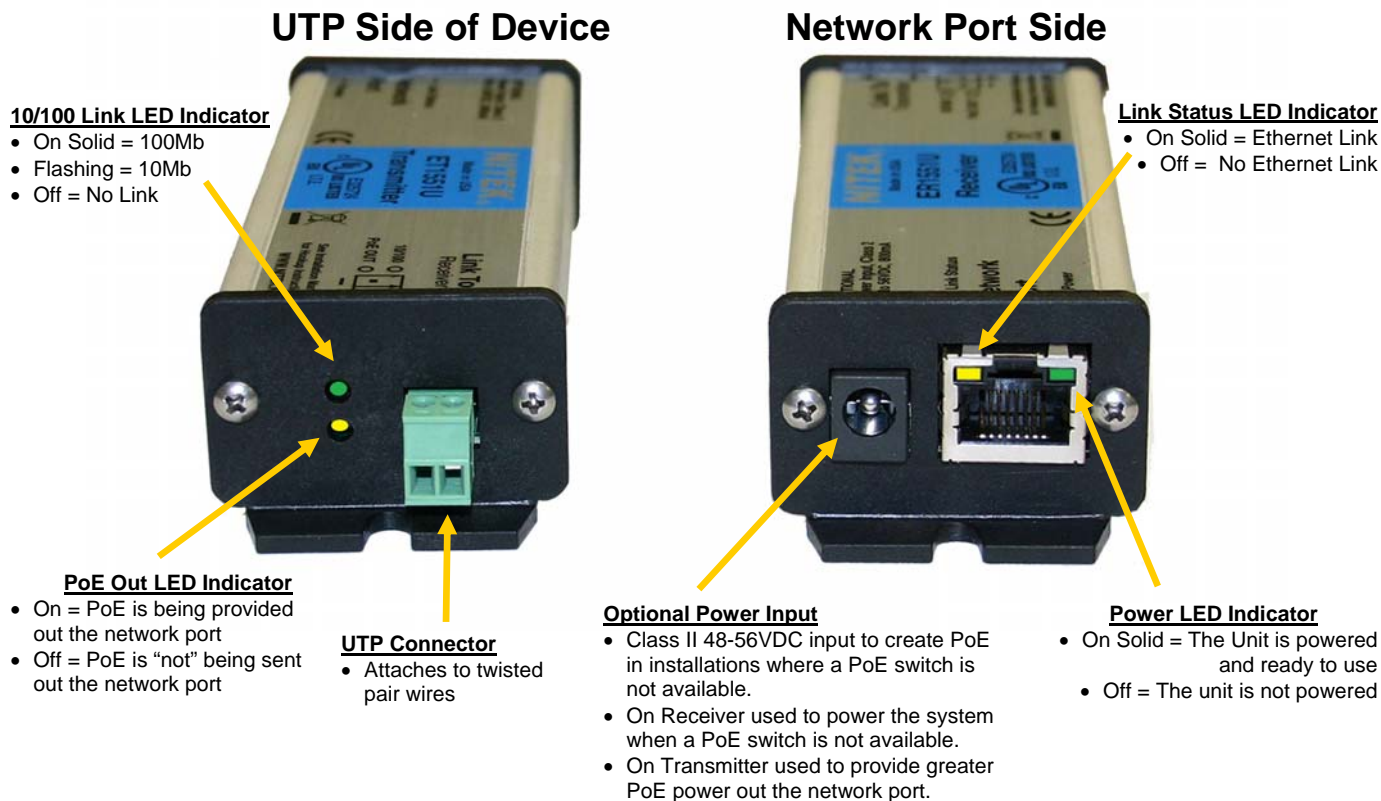
Refer all servicing to qualified service personnel. Servicing is required when the device has been damaged in any way, such as the power supply cord or plug is damaged, liquid has been spilled on, or objects have fallen into the device, the device has been exposed to rain or moisture, does not operate normally or has been dropped.

WARNING: To reduce risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Installation shall be performed ONLY by qualified personnel and must conform to all local codes.

Unless the device is specifically marked as a NEMA 3, 3R, 3S, 4, 4X, 6 or 6P enclosure, it is designed for indoor use ONLY and it must not be installed where exposed to rain or moisture.

Parts of the EL1551U

UTP Side of Device

10/100 Link LED Indicator
- On Solid = 100Mb
- Flashing = 10Mb
- Off = No Link

PoE Out LED Indicator
- On = PoE is being provided out the network port
- Off = PoE is "not" being sent out the network port

UTP Connector
- Attaches to twisted pair wires

Network Port Side

Link Status LED Indicator
- On Solid = Ethernet Link
- Off = No Ethernet Link

Optional Power Input
- Class II 48-56VDC input to create PoE in installations where a PoE switch is not available.
- On Receiver used to power the system when a PoE switch is not available.
- On Transmitter used to provide greater PoE power out the network port.

Power LED Indicator
- On Solid = The Unit is powered and ready to use
- Off = The unit is not powered

Installation Considerations

Wire and Cable Recommendations: The EL1551U is designed for use with copper based 24AWG Twisted Pair (CAT3 or CAT5) cable. Other heavier gage wires are possible but the wire must be a twisted paired cable. The RJ45 network port pin out schemes shall be in accordance with the 568B standard. The quality of which must be consistent with any reasonably serviceable cable condition. Cables should be free from damage as in cuts, breaks, or cracks to the outer covering and insulated shielding which may compromise the signal conductivity of the cable.

For more specific information regarding wire types, gauges, and proper installation techniques please call Tech Support at (847)259-8900 or (800)528-4343.

Ethernet: The EL1551U is designed to transmit and receive up to 100Mbps of Ethernet data to a maximum distance of 1,600ft / 500m. Before considering this solution be sure that the cable involved does not exceed the recommended maximum lengths. If the cable distance value is undetermined at the time of installation, we recommend the use of a Time Domain Reflectometer (TDR) or other method to determine the unknown cable distance estimates.
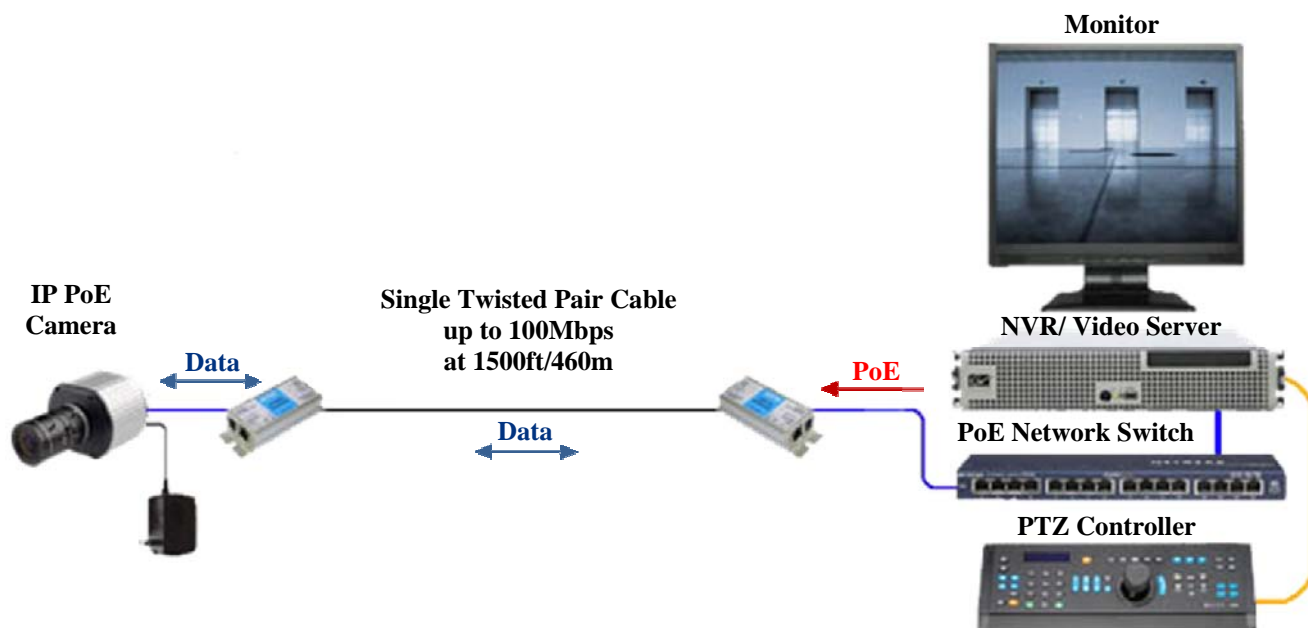
Installation & Setup

Equipment Requirements & Mounting: The process for utilizing the EL1551U is quick and easy. A common topology involves a length of existing single twisted pair cable up to 1,600ft / 500m, the EL1551U transmitter and receiver pairs (ET1551U & ER1551U), an IP camera or other peripheral network device, referred to as the Powered Device or PD, and a 3rd party PoE network switch or Power Sourcing Equipment/PSE. The PD and PSE should both be either 802.3af or 802.3at compliant. That is requiring or producing no more then 15.4 W for 802.3af and up to 25.5W for 802.3at PoE power.

The method for facilitating Ethernet communication over single twisted pair cable starts with connecting the ER1551U to the Power Sourcing Equipment, usually a switch RJ45-to-RJ45 via a CAT5e/CAT6 patch cable. The ER1551U two-position plug enables connectivity to the length of single twisted pair cable at the head end. The IP camera interfaces with the ET1551U via network port RJ45 and a CAT5e/CAT6 patch cord. The Link Port of the ET1551U intern connects to the length of single twisted pair cable by its two-position plug at the camera end. Power from the PSE can provide operational power for both EL1551U units. An illustration of this is represented below in the "Installment Topology - Type A" diagram.

Upon final power up the devices will undergo initialization and auto-configuration processes (see LED Indicator chart on page 7) which may take a number of seconds, time variations are device/installation/topology dependent, to complete before PoE and Ethernet communication commences. If issues arise during the installation process please see the "Trouble Shooting Tips" section (page 8). You may also contact our web based live tech support at: www.nitek.net ; call (800) 528-4343 in the USA, and (847) 259-8900 from outside the USA in order to speak with one of our engineers directly.

Installment Topology - Type A

Monitor

IP PoE Camera

Data

Single Twisted Pair Cable up to 100Mbps at 1500ft/460m

Data

PoE

NVR/ Video Server

PoE Network Switch

PTZ Controller

Shown in the diagram above, are the EL1551U device includes a transmitter and a receiver unit. They are connected to an existing single twisted pair cable which enables the transmission of up to 100Mbps of network data. Power for the units is derived from the 3rd party PoE network switch. Total distance, via single twisted pair cable, between the EL1551U devices cannot exceed 1,500ft./460m.

Installation & Setup

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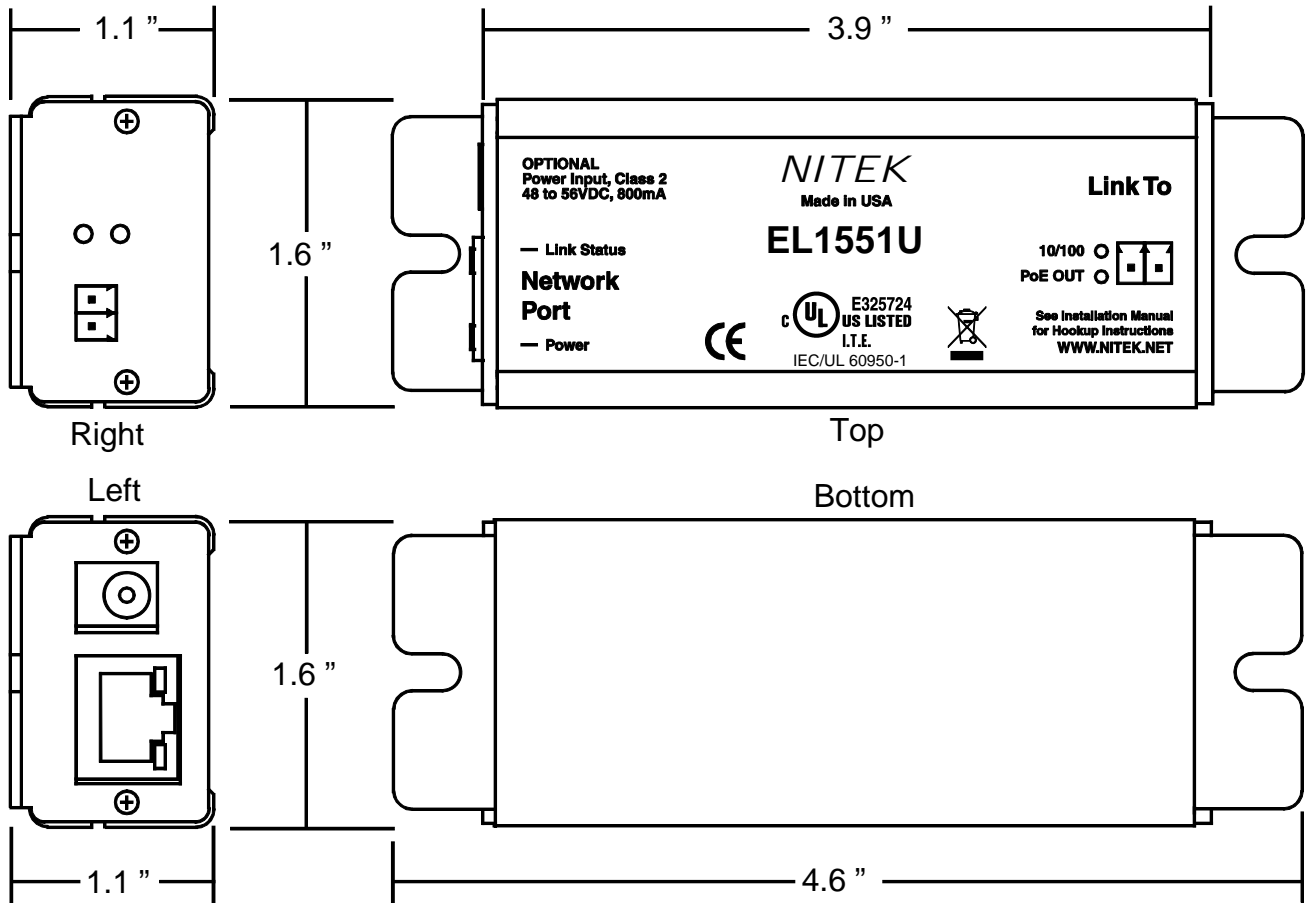
Upon final power up the devices will under go initialization and auto-configuration processes, also see LED Indicator chart on page 7 which may take a number of seconds, time variations are device/installation/topology parameter dependent, to complete before Ethernet communication commences. If issues arise during the installation process please see the "Trouble Shooting Tips" section (page 8). You may also contact our web based live tech support at: www.nitek.net ; call (800) 528-4343 in the USA, and (847) 259-8900 from outside the USA in order to speak with one of our engineers directly.

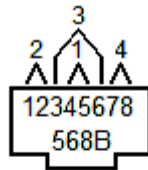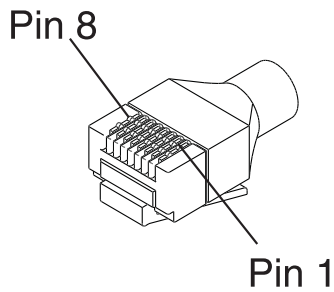# Installment Topology - Type B
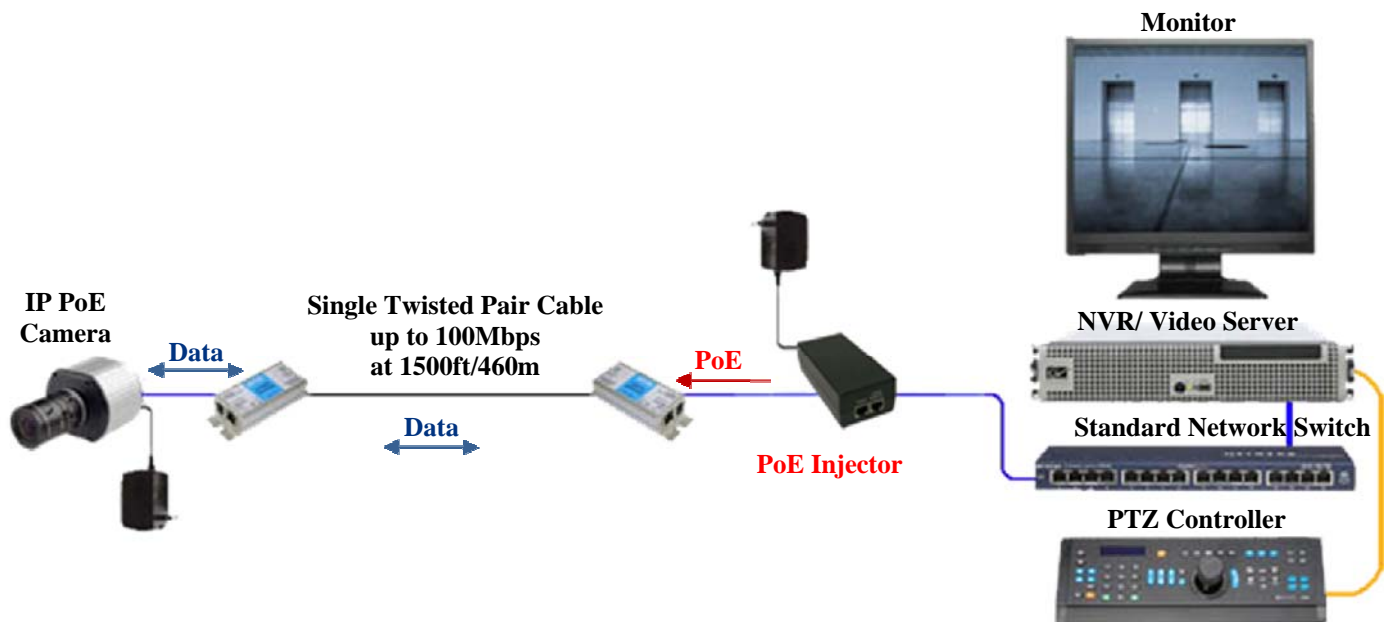
Shown in the diagram above, are the EL1551U device include a transmitter and a receiver unit. They are connected to an existing single twisted pair cable which enables the transmission of up to 100Mbps of network data. Power for the units is derived from the 3rd party PoE Injector. Total distance, via single twisted pair cable, between the EL1551U devices cannot exceed 1,500ft./460m.
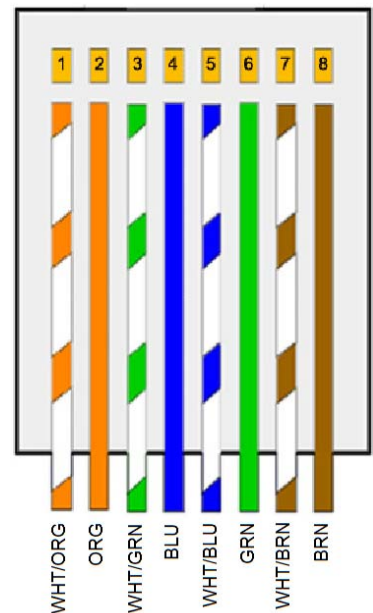
Device Dimensions

1.1 "

3.9 "

1.6 "

OPTIONAL
Power Input, Class 2
48 to 56VDC, 800mA

— Link Status

**Network
Port**

— Power

NITEK
Made in USA

EL1551U

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E325724
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IEC/UL 60950-1

Link To

10/100 ○
PoE OUT ○

See Installation Manual
for Hookup Instructions
WWW.NITEK.NET

Right

Top

Left

Bottom

1.6 "

1.1 "

4.6 "

568B Pin out Termination

Pin 8

Pin 1

3
2   1   4
12345678
568B

PIN	COLOR
1	WHT/ORG
2	ORANGE
3	WHT/GRN
4	BLUE
5	WHT/BLU
6	GREEN
7	WHT/BRN
8	BROWN

1 2 3 4 5 6 7 8

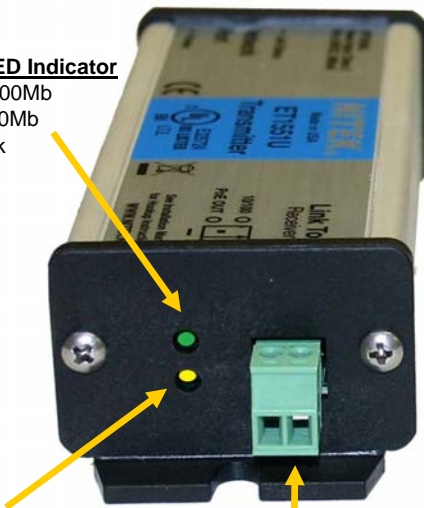WHT/ORG   ORG   WHT/GRN   BLU   WHT/BLU   GRN   WHT/BRN   BRN

568B

Connectivity Status

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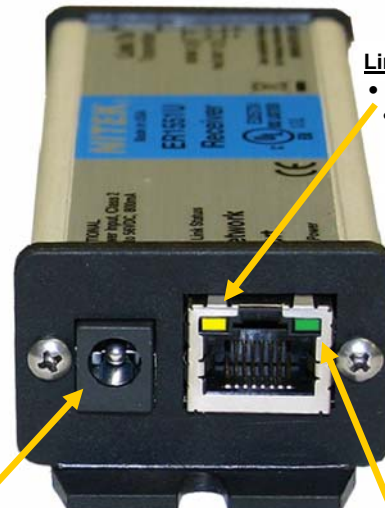- Off = PoE is "not" being sent out the network port

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CONNECTION		LED STATUS INDICATORS		
PORT	LED LABEL	OFF	ON	FLASHING
Network	Power	No Power	Power Good	NA
	Link Status	No Ethernet Link	Ethernet Link Good	NA
Link	PoE Out	No PoE Power Out	PoE Power Good	NA
	10/100	No Link	100Mb	10Mb

Troubleshooting

PROBLEM	POSSIBLE CAUSE
No video/data	Check camera and EL1551U device connections.
	Check Single Twisted Pair cable condition and connectors.
	Check that the camera is powered.
	Check that supplied camera power meets manufacturer's specifications.
	Check that the cable distances do not exceed PoE capabilities.
	Max. total distance of 1500ft (460m).
	Check that Single Twisted Pair cable does not exceed the Ethernet data transmission operating distances of the EL1551U.
	Check link & device status.
Video/data loss	Check network switch terminations & link status.
	Check network routing table(s).
	Confer with site Network Administrator

For Tech Support Call   **1-(800)528-4343 (USA)**
1-(847)259-8900 (Other)
www.nitek.net

Technical Specifications

Network Transmission Device

Network Port	RJ45 Jack
Link Port	Screw Terminal
Ethernet	Auto Configuring 10/100 Full Duplex
LED Indicators	Link Status, Power, PoE out, 10Mb or 100Mb
PoE Compliance	IEEE 802.3af & IEEE 802.3at
Max Operating Distance	1,500ft /460m
Power Draw per Device	1.5 Watts each
UTP Cable Specifications	
DC Loop Resistance	51 Ohms/1000 feet (max) (51 Ohms/304 meters)
Normal Capacitance	17pF/ft.
Impedance	100 Ohms +/- 20%
UTP Category	2 or better
Rating/Listing	
UL	IEC/UL 60950-1
NEMA TS-2	Temperature & Humidity NEMA 2.2.7
	Mechanical Vibration NEMA 2.2.8
	Mechanical Shock NEMA 2.2.9
	Operating Voltage NEMA 2.1.2
	Operating Frequency NEMA 2.1.3
	Transient Test NEMA 2.1.6 thru 2.1.8
Operating Temperature	-40° to 75° C / -40° to 167° F
Humidity	Up to 95% non-condensing
Dimensions	1.1" x 1.6" x 4.6" including tabs
Shipping Dimensions	8" x 5" x 2"
Shipping Weight	3 lbs

Product Warranty and Return Information

Lifetime Limited Warranty
Network Extender Products

NITEK warrants the original consumer purchaser that the Network Extender products that it sells will be free from defects in material and workmanship. If any such product proves defective by our inspection, after sale to the original consumer purchaser, NITEK, at its option, will either repair the defective product without charge for parts and labor or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, the customer must notify NITEK of the defect and shall be responsible for packaging and shipping the defective product to the service location designated by NITEK with shipping charges prepaid. NITEK shall pay for the return of the product to the purchaser if the shipment is to a location within the U.S.A. The purchaser shall be responsible for paying all shipping charges, duties and taxes if the product is returned from a location outside the U.S.A.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance or care, or to any product which shall have been repaired or altered outside our plant in any way, or which has been operated in a manner exceeding its specifications, or which has had the serial number removed. NITEK shall not be obligated to furnish service under this warranty: a) to repair damage resulting from attempts by personnel other than NITEK representatives to repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

This warranty is given by NITEK with respect to the Network Extender products in lieu of any other warranties, express or implied. NITEK disclaims any implied warranties of merchantability or fitness for a particular purpose. NITEK's responsibility to repair or replace a defective product is the sole exclusive remedy provided to the purchaser for breach of this warranty. NITEK will not be liable for any indirect, incidental or consequential damages irrespective of whether NITEK has advance notice of the possibility of such damages.

Return Policy

A. All returns for warranty, repair, credit or any other reason must be pre-authorized. A return merchandise authorization (RMA) form must be requested from the NITEK Customer Service Department. The form, which will be emailed to the customer, must be filed out completely and emailed back to the sender at NITEK for approval. An RMA number will be assigned if the request is approved. In any event, the customer will be notified by NITEK customer service of the outcome. All approved returns must be shipped freight prepaid, insured and properly packaged. A copy of the approved RMA form must be enclosed in the shipping container with the goods being returned and the RMA number must be marked in a visible area on the exterior of the container.

B. Credit Returns must have been purchased within the last 30 days of the date of the receipt of the equipment at NITEK. Credit returns must be current products listed on the NITEK published price list, in effect at the time of the return and must be in new and saleable condition, with all factory packaging. All Credit returns are subject to a restocking charge of up to 40%. Additional restocking and/or refurbishing charges may be assessed upon inspection. If it is determined by NITEK that the returned equipment does not meet these conditions, a credit will not be issued.