INSTALLATION GUIDE

ET1551U

IP Video Camera Over Single Twisted Wire

Ethernet Extender with EtherStretch

Description

The **ET1551U** is another component of the NITEK **EtherStretch** line. This Environmentally hardened **EtherStretch** solution allows for the utilization of new or existing UTP cable infrastructure to transmit data from IP cameras and other network devices along with power (PoE) to operate these networked devices well beyond standard network limitations. The system can extend Ethernet up to 500m or 1600ft of category cable making the **ET1551U** is ideal for retrofitting existing installations.

The ET1551U is a transmitter that mates with any of the **EtherStretch** Multi-port series receiver units and require very little installation time and no set up or configuration. This system quickly turns any ordinary single twisted pair wire into a high speed network communication for distances up to 500 meters or 1600ft.

The ET1551U is completely transparent to the network thus requiring no IP or MAC addressing. Simply connect your network devices to the networking ports of the ET1551U transmitter and associated receiver along with existing cable run between the units and the system begins communicating. LED indicators show the status and speed of network communications and PoE power.

The NITEK **EtherStretch** ET1551U reliably extends network communications to overcome 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.

c UL E325724 US LISTED I.T.E.
IEC/UL 60950-1

CE

RoHS COMPLIANT 2002/95/EC

06072013

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 Schans 19-21 2a
8231 KA Lelystad
Tel: +31(0)320-230005
E-mail: info@nitek.nl
WWW.NITEK.NL

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.

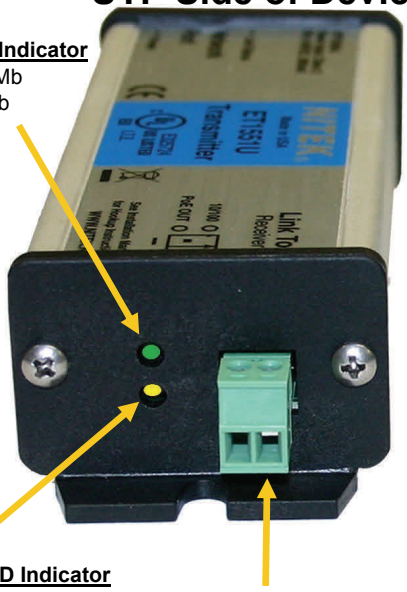
WARNING: To reduce risk of fire or electric shock, do not expose this apparatus to rain or moisture.

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 ET1551U

UTP Side of Device

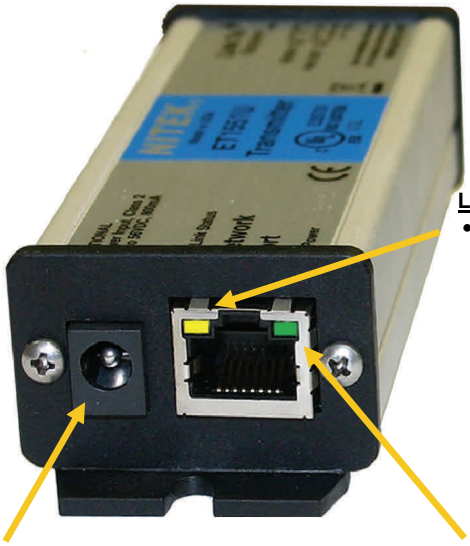


10/100 Link LED Indicator
- On Solid = 100Mb
- Flashing = 10Mb
- Off = No Link

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



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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 ET1551U is designed for use with copper based 24AWG Twisted Pair (CAT3 or CAT5) cable, but can be used with other types of UTP cable like 18AWG. The cable quality must be consistent with any reasonably serviceable cable condition. It must be free from damage such as 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 & PoE: The ET1551U is designed to transmit and receive up to 100Mbps of Ethernet data at a maximum distance of 1,600ft / 500m. Before considering this solution be sure that the cable involved does not exceed the recommended maximum length. If the cable length is indeterminate at the time of installation, we recommend the use of a Ohm meter and do a loop resistance test to determine unknown cable distances. A TDR (Time Domain Reflectometer, which through the use of short rise time pulses cam measure impedance characteristics, splices, and unknown cable distance estimates) could also be used.

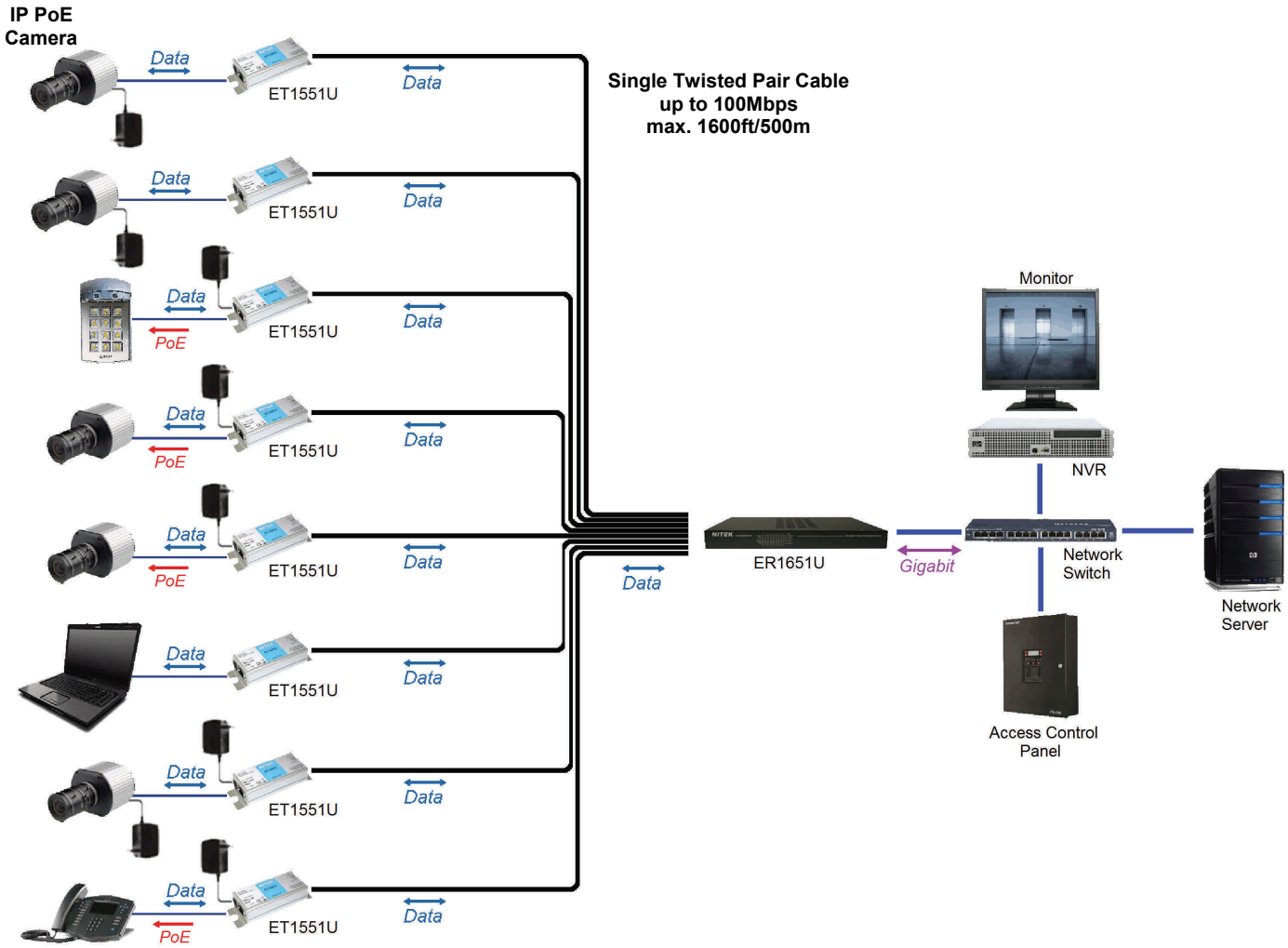
Installation & Setup

Equipment Requirements & Mounting: The process for utilizing the ET1551U is rather quick and easy. A common topology involves lengths of existing or new single twisted pair cable up to 1600 feet or 500 meters, the ET1551U transmitter and the associated receiver such as the ER1551U or ER1651U, an IP camera or other peripheral network devices referred to as the Power Device or PD, and a 3rd party PoE network switch or Power Sourcing Equipment/PSE. The PD and PSE must both be either 802.3af or 802.3at compliant. That is requiring or producing 15.4 W 48VDC for 802.3af up to 25.5W 60VDC for 802.3at PoE power for proper attached device operation.

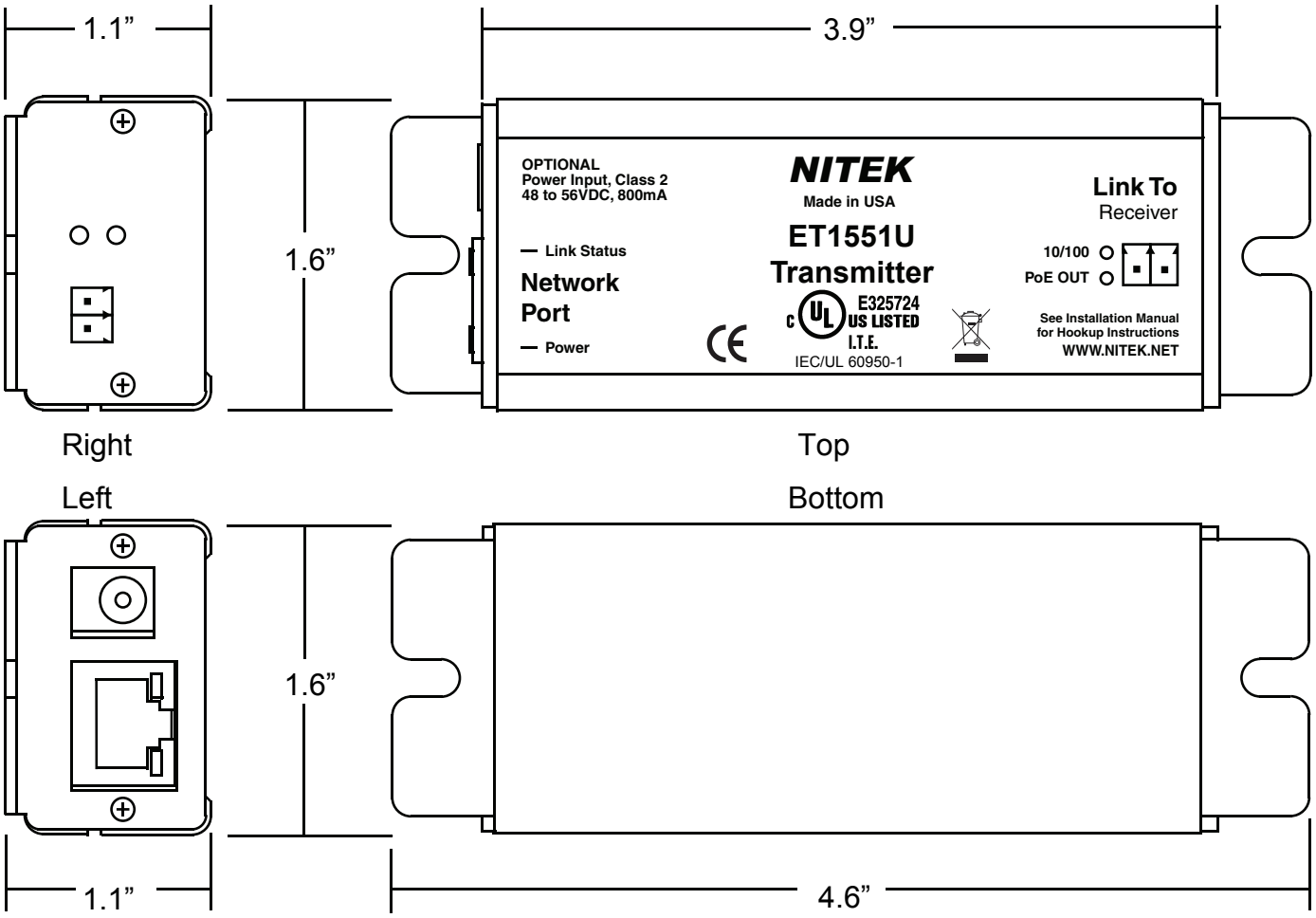
The method for facilitating Ethernet communication over single twisted pair cable starts by connecting a receiver such as the ER1551U or ER1651U to the lengths of single twisted pair "Link" cables. The IP camera interfaces with the ET1551U via its "Network Port" labeled RJ45 with a CAT5e/CAT6 patch cord. The output of the ET1551U in tern connects to the length of single twisted pair cable by its two-position plug at the "Link Port" end. Power from the PSE can provide operational power for just the ET1551U units. An illustration of this is represented below in the "Common Installment Type " diagram.

Upon final power up the devices will under go initialization and auto-configuration processes (see LED Indicator chart on page 6) which may take a number of seconds, time variations are device/installation/topology parameter dependent, to complete before PoE and Ethernet communication commences. For optimal performance, adherence to the IP camera operational specifications is recommended. If issues arise during the installation process please see the "Trouble Shooting Tips" section (page 7). You may also contact our web based live tech support at: www.nitek.net or call 1-(800)528-4343 in the USA, or (847)259-8900 outside the USA in order to speak with one of our engineers directly.

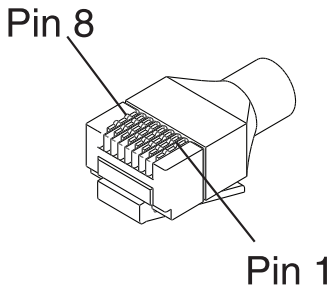
Common Installment Type

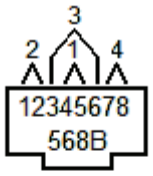


Device Dimensions

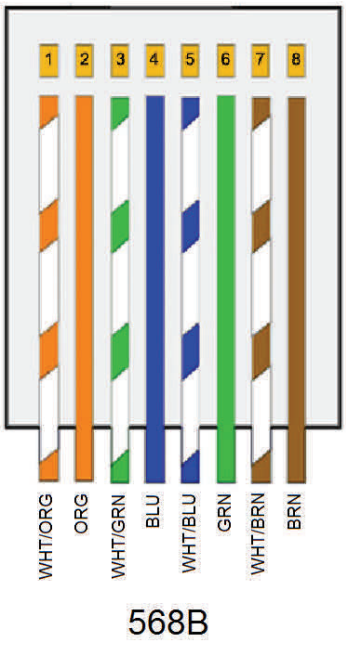


568B Pin out Termination





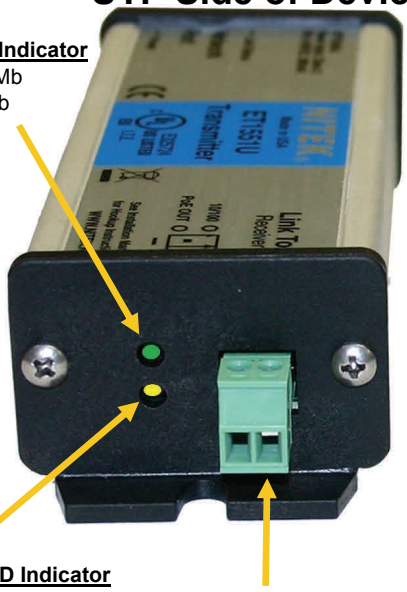
PIN	COLOR
1	WHT/ORG
2	ORANGE
3	WHT/GRN
4	BLUE
5	WHT/BLU
6	GREEN
7	WHT/BRN
8	BROWN



568B

Connectivity Status

UTP Side of Device



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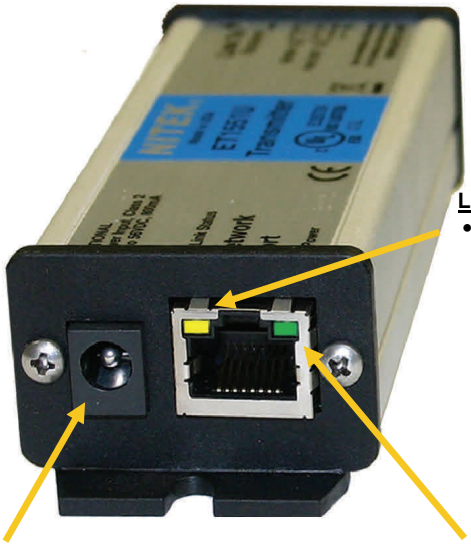

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CONNECTION		LED STATUS INDICATORS		
PORT	LED LABEL	OFF	ON	FLASHING
Network	Power	No Power	Power Good	NA
	Link Status	No Ethernet Link	Ethernet Link Good	NA
Link	PoE Out	No PoE Power Out	PoE Power Good	NA
	10/100	No Link	100Mb	10Mb

Troubleshooting

PROBLEM	POSSIBLE CAUSE
No video/data	Check camera, ET1551U & Multi-port receiver device connections. Check Single Twisted Pair wire condition and connectors. Check that the camera is powered. Check that supplied camera power meets manufacturer's specifications. Check that cable distances do not exceed PoE capabilities. Max. total distance of 1600ft (500m). Check that Single Twisted Pair wire does not exceed the Ethernet data transmission operating distances of the ET1551U & multi-port receiver. Check link & device status. Max. total distance of 1600ft (500m).
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 Connector
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	1,640ft /500m
Power Draw per Device	1.5 Watts
UTP Cable Specifications	
DC Loop Resistance	51 Ohms/1000feet (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 3" x 2"
Shipping Weight	2 lbs

Product Warranty and Return Information

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 for a period of two years from date of purchase. 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 before expiration of the warranty period. The customer 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.