

# INSTALLATION GUIDE

*VB39F*

## Video Balun Transceiver for Twisted Pair (with built-in surge suppression)



### Description

Video Balun Transceiver with fixed BNC for twisted pair operation with other balun transceivers or active receivers. The VB39F has built-in surge suppression for added equipment protection.

The VB39F video balun transceiver is a video transmission device that provides a low cost means of sending live video over unshielded twisted pair, point-to-point wiring for distances of up to 750 feet (225 meters) with other passive balun transceivers, up to 1,500 feet (450 meters) with TR515 single channel and model 51 series hubs, and up to 3,000 feet (900 meters) with TR560 and model 56 Series hubs. The VB39F is compatible with all the "up-the-coax" control systems. A basic system uses (2) video balun transceivers, one at each end of a twisted pair of wires.

These units are intended for use over existing in-house telephone wiring, Category wiring or other twisted pair cable runs to provide a convenient, cost effective alternative to coax. The VB39F is designed to provide superior immunity from noise and interference even when running next to line power! The VB39F also provides a unique mounting tab and strain relief

**NITEK**®

USA

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

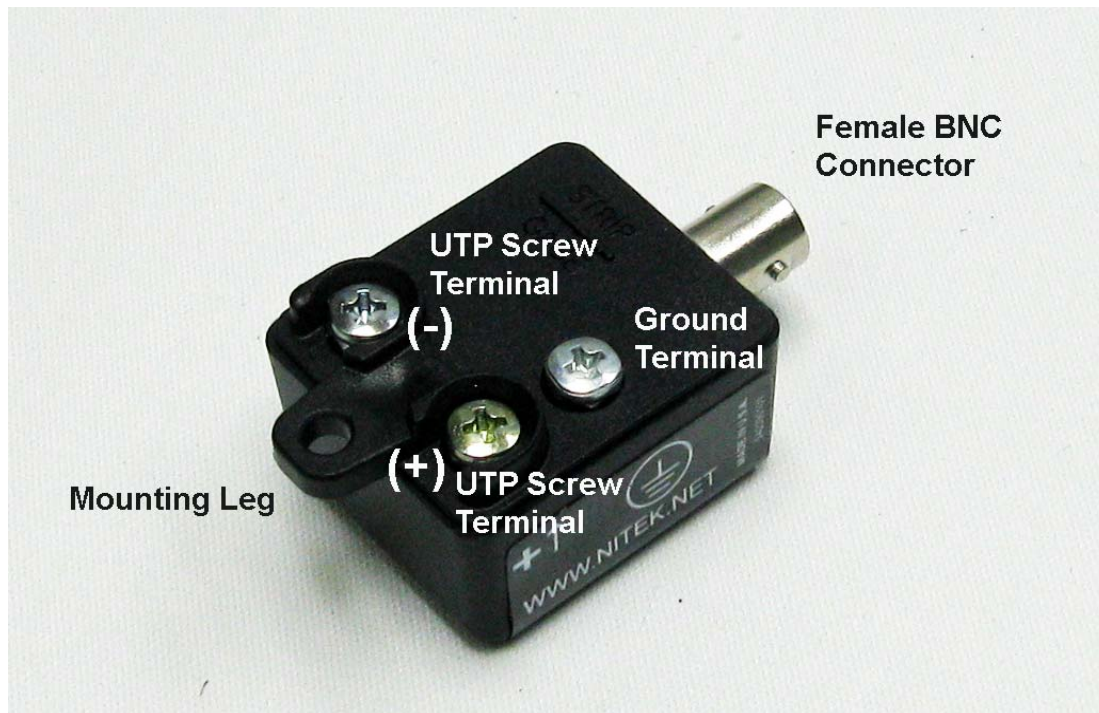
EUROPE

De Schans 19-21 2a  
8231 KA Lelystad  
Tel: +31(0)320-2300005  
Fax: +31(0)320-282186  
E-mail: [info@nitek.nl](mailto:info@nitek.nl)  
[WWW.NITEK.NL](http://WWW.NITEK.NL)

## Important Safety Instructions

1. Be sure to read these Safety Instructions.
2. Keep the Instructions for future reference.
3. Be sure to HEED all Warnings.
4. Follow ALL instructions.
5. DO NOT use this device or any of the equipment described, near water.
6. Clean this device ONLY with a dry cloth.
7. DO NOT block any ventilation openings.
8. Install in accordance with the manufacturer's instructions.
9. DO NOT install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
10. 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.
11. Protect the power cord from being walked on or pinched especially at plugs, convenience receptacles and other points where they exit from the device.
12. Only use attachments and/or accessories specified by the manufacturer.
13. 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.
14. **WARNING:** To reduce risk of fire or electric shock, do not expose this apparatus to rain or moisture.
15. Installation shall be performed ONLY by qualified personnel and must conform to all local codes.
16. 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 VB39F



## Installation & Setup

### Installation Considerations

**Wire and Cable Recommendations.** The VB39F is designed for use with unshielded twisted pair (UTP) wiring. Although the system will operate over wire gauges from 18 AWG through 24 AWG, all NITEK UTP system designs are optimized for 24AWG and all adjustment and setting information assumes use of 24 AWG. Individually shielded pairs should be avoided, as they drastically reduce the operating range of the systems. Multi-pair cable (25-pair or more) with an overall shield are acceptable. Video can be operated in the same communication cable coexistent with telephone, computer, control signals, power voltages and other video signals. While video may be routed through telephone punch-down block terminals, any bridge-taps, also called T-taps and any resistive, capacitive or inductive devices **MUST BE** removed from the pair. Connect an 18 AWG solid Earth Ground wire to the "Ground" terminal on the VB39M for optimum surge protection.

For more specific information regarding wire types, gauges and proper installation techniques, please call Tech Support at 800-528-4343.

**Video.** The VB39F is designed to transmit or receive video at a maximum distance of 750 feet with a companion NITEK Balun over Category wire of 24 AWG or up to 3,000 feet with an appropriate active NITEK receiver. Before commencing installation be sure that the cable length does not exceed the recommended lengths. If the length of cable is not known, then a measurement of "Loop Resistance" of the cable can be made using a reliable ohmmeter. Short the pair together at one end and measure the resistance of the "Loop" across the pair at the opposite end of the cable. The resistance values shown below are for 750 feet of the most commonly used UTP cables.

# Installation & Setup

## Unshielded Twisted Pair (Loop Resistance at 750 feet)

|                 |         |         |         |         |
|-----------------|---------|---------|---------|---------|
| AWG             | 18      | 20      | 22      | 24      |
| Loop Resistance | 10 Ohms | 15 Ohms | 24 Ohms | 39 Ohms |

### Mounting

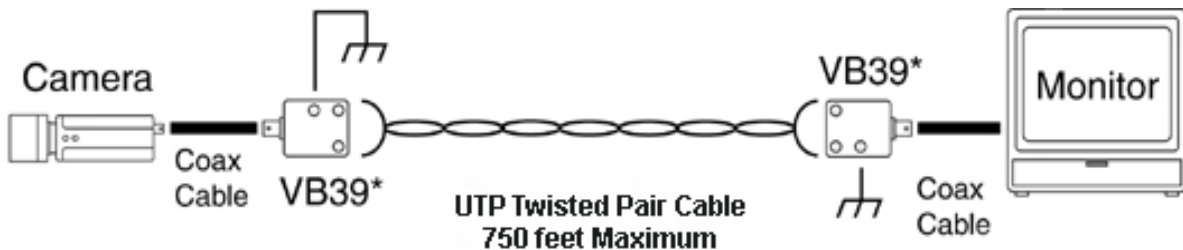
The VB39F can be mounted external to a camera housing by use of the mounting leg, or can be placed inside the camera housing.

When mounting the VB39F externally, the placement should be sufficiently close to the camera housing so that the coax cable from the camera can be conveniently connected to the VB39F. The mounting leg of the VB39F can be used to secure the device either with a screw or wire wrap. The wires of the UTP cable must be stripped, as required and wrapped around and connected to the appropriate + and - Screw terminals on the back of the VB39F. Be sure to maintain the same UTP polarity at both the transmit and receive units.

When mounting the VB39F inside a camera housing a small hole must be available to pass the UTP cable through. The cable must be of sufficient length to be routed back to the video crossover. As with external mounting, the coax video cable will connect within the housing to the camera video BNC input.

In either mounting, connect an 18 AWG solid wire from Earth Ground to the "Ground" terminal on the VB39F for optimum surge protection.

### Hook-Up



In the diagram shown above, two VB39F devices are used; one at the Head-End (monitor location) and the second at the camera location. No voltage is required for the baluns, since they are passive devices. Video is sent back to the monitor over the UTP cable by means of the two baluns operating as video transceivers. Note the Earth Ground connections for the surge protection circuits.

# Troubleshooting

| PROBLEM  | POSSIBLE CAUSE  |
|--|---|
| No video at receiver                             | Check that camera video and coax connections are correct<br>Check the Unshielded Twisted Pair cable for opens or shorts<br>Check that the camera is powered<br>Check that camera power meets manufacturers specifications |
| Ghost image to the right,<br>Horizontal smearing | Check the cable for possible "T" taps or bridge taps and<br>remove them   |
| Video will not sync,<br>wide white jagged area   | Twisted pair wires for video are reversed; correct wires on<br>UTP connection   |

For Tech Support Call **800-528-4343**

# Specifications

## Transceiver Unit

|                    |  |
|--------------------|--|
| Size               | 1.3" H x 2.0" W x .95" D                       |
| Power Requirements | None required                                  |
| Input              | 1 Vpp composite video<br>(monochrome or color) |
| Output             | Balanced low voltage current loop              |

## System (two transceivers required)

|                         |  |
|-------------------------|--|
| Video Format            | RS170, PAL, SECAM, NTSC, CCIR (color or B/W)   |
| Video Input             | 1 Vpp Composite Video<br>(monochrome or color) |
| Operating Frequency     | DC to 10MHz                                    |
| Common Mode Rejection   | >60dB typical                                  |
| Wire Size               | 24 to 18 AWG unshielded twisted pair           |
| DC Loop Resistance      | 51 ohms per 1,000 feet (max)                   |
| Nominal Capacitance     | 17 pF/foot                                     |
| Impedence               | 100 ohms + or - 20%                            |
| Category Wire           | Category 3 or better                           |
| Temperature Range       | -10 degrees C to +85 degrees C                 |
| Humidity range          | 0 to 98% non-condensing                        |
| Enclosure Material      | Black, ABS flame retardant plastic             |
| Twisted Pair Connection | Screw Terminals                                |
| Shipping Weight         | 1 Lb.  |



# Product Warranty and Return Information

## Lifetime Limited Warranty Video Balun Transceiver Products

NITEK warrants the original consumer purchaser that the Video Balun Transceiver 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.

The purchaser 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 Video Balun Transceiver 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 filled 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.