

# **LC1003A**

## **IP Security CCTV Connector Installation Guide**

### ***Responsibilities***

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Black Box Corp. recommends keeping the original packaging for transporting the equipment later.

### ***Customer Service***

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Representatives are available to answer your questions from 24 x 7 x 365.

### ***Document Revisions***

New Release July 2000

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## LC1003A Installation Guide

# LC1003A Components

### ***Provided Materials***

Unpack the LC1003A. The following equipment is included with your purchase:

LC1003A

Warranty card and Installation Guide

120 VAC/5 VDC power adapter

Install Viewer software

### ***Required Materials***

The following items are necessary for the successful installation of the LC1003A:

Cat-5 Ethernet cable

CCTV camera or other video output device  
(NTSC/PAL)

75-Ohm coaxial video cable

Ethernet LAN/WAN connection such as a hub  
router, DSL or cable modem, etc.

## LC1003A Installation Guide

# Overview

The LC1003A is a TCP/IP addressable digital video transmitter. The device allows a user to connect any standard CCTV camera, multiplexer, matrix switch, etc., directly to a Local Area Network (LAN) or Wide Area Network (WAN). Local CCTV output can be recorded to a VCR and displayed on video monitors and matrix switches, etc. *No network bandwidth is used when not connected to a receiver.*

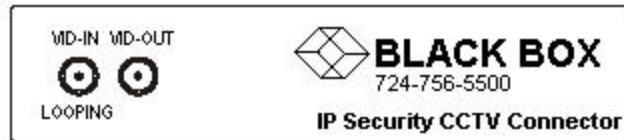


Figure 1 Front of the LC1003A

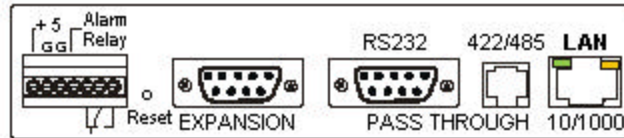


Figure 2 Back of the LC1003A

## Input/Output Features

**Video Input** One 75-Ohm BNC analog video, 1Vp-p NTSC/PAL.

**Video Loop Through** One full-time 75-Ohm BNC analog video output. 1 Vp-p composite video.

**LAN** One RJ-45 Cat 5 connector, autosensing **Interface** 10/100 base-T digital Ethernet interface.

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**Alarm Input** One 2-pin screw terminal. Normally high (1) connects to user-supplied switch closure.

**Relay Output** One 3-pin screw terminal, standard isolated form "C". Rated at 24V DC at 250 mA.

**RS-232** DB9 male expansion port for connecting an additional three alarms and seven relays using the LC-IO module. (sold separately)

**RS-232** DB9 male pass-through control port

**RS-422** RJ-11 pass-through control port.

## ***Performance***

**Video latency** 1/30 of a second

**Max. Compression Rate** - 30 Frames/Second

**Nominal Frame Refresh** - Up to 15 fps at 128 Kbps,  
- Up to 30 fps at 256 Kbps

## ***Power***

**Power Connector** - One 2-screw terminal connector

**Power Requirements** - 12V DC 500 mA regulated supply

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### **Software**

Each LC1003A ships with a copy of *Install/Viewer* entry-level receiver software.

NOTE: Purchase *IP Security Digital Recorder* receiver software for expanded features and *IP Security View* for a single-user with simultaneous multiple connections.

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# LC1003A Installation

**NOTE:** Any camera and/or peripheral CCTV devices connected to the LC1003A should be installed by following the manufacturer's documentation for the device.

### ***Connecting Video***

Use CCTV/video-grade coaxial cable with BNC connectors and follow the requirements from the cable manufacturer for recommended maximum length.



**Step 1:** Connect the output of the video camera or other video source to the *VID-IN* connector on the LC1003A.

**Step 2:** Connect a cable from the *VID-OUT* connector on the LC1003A to a desired peripheral that accepts video output such as a VCR or monitor. That device must also have a video-in connector.

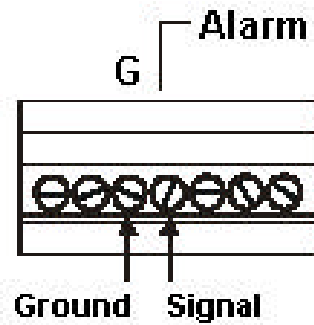
**NOTE:** If no device is connected to the **VID-OUT** port, then a **75-Ohm terminator** should be installed on the **VID-OUT** port.

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### ***Connecting Alarms***

Connect the ground wire to the G terminal and the signal wire to the Alarm terminal on the LC1003A (Figure 4).

The alarm is transmitted on any change in contact, which allows either Normally Open or Normally Closed non-alarm conditions.



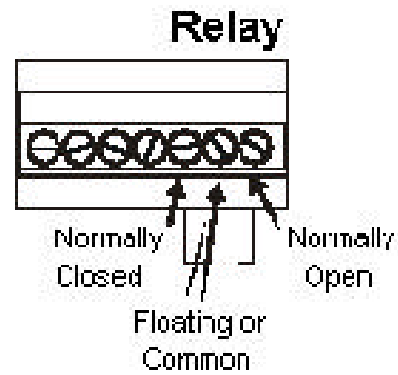
**Figure 4 Alarm connections**



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### ***Connecting Relays***

Connect two wires – common and either Normally-Open or Normally-Closed - to the Relay connectors on the LC1003A (Figure 5). 24 VDC, 250 mA maximum.



**Figure 5 Wiring the relay**

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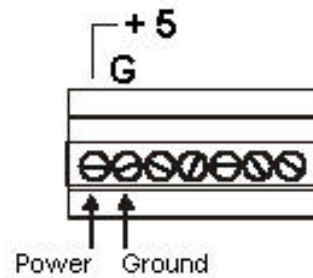
### ***Connecting Power***

**IMPORTANT!** Ensure that the power supply's leads are properly identified and wired correctly. Wiring the power backwards will damage the LC1003A.

**Step 1:** Check the power supply's leads with a multimeter to determine positive and ground.

**Step 2:** Wire the provided power supply into the power terminals +5 and G (Figure 6).

**Step 3:** Plug the power supply into a wall receptacle.



**Figure 6 Wiring power**

## Connecting To Peripheral Devices

### *Introduction*

Connecting to any RS232-controlled device multiplexer, Pan-Tilt-Zoom camera, quad, etc. requires a telemetry cable specifically designed for the peripheral device that you wish to connect. Contact BLACK BOX for more information for your application.

Note: Controlling a PTZ camera or a multiplexer requires PC Peek version 4.04 or greater on the receiver PC and the use of ASCII commands in a Look-Up Table (LUT). BLACK BOX provides the look-up table with the telemetry cable for supported peripherals.

### **Pass-Through Ports**

The LC1003A has two pass-through ports available – RS-232 and RS-422/485 – depending on your peripheral device's requirements.

The 422/485 pass-through port is configured for a 4-wire duplex 422 connection and has the following pin assignments:

#### **422/485 Pin Description**

- |   |                         |
|---|-------------------------|
| 1 | Received Data (RX -)    |
| 2 | Transmitted Data (TX -) |
| 3 | Transmitted Data (TX +) |
| 4 | Received Data (RX +)    |

To enable 2-wire simplex 485 pass-through, connect pin 1 with pin 2 and pin 3 with pin 4.

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The RS-232 pass-through port has the following pin assignments:

### **RS-232 Pin Description**

- |   |  |
|---|--|
| 1 | Received Line Signal Detector (RLSD),<br>Carried Detect (CD), Data Carrier Detect<br>(DCD) |
| 2 | Received Data (RD, RXD)  |
| 3 | Transmitted Data (TD, TXD)   |
| 4 | DTE Ready, Data Terminal Ready (DTR)   |
| 5 | Signal Ground, Common Return (SGND)  |
| 6 | DCE Ready, Data Set Ready (DCR, DSR)   |
| 7 | Request to Send (RTS)  |
| 8 | Clear to Send (CTS)  |
| 9 | Ring Indicator (RI)  |

Only pins 3 and 5 are used.

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### *Multiplexers and Quads*

- Step 1:** Connect the telemetry cable from the RS-232 port on the LC1003A to the quad or multiplexer (Figure 7).
- Step 2:** Connect the monitor output from the quad/or multiplexer to VID-IN on the LC1003A with coax video cable.
- Step 3:** In PC Peek, set the pass-through port settings according to the peripheral device's documentation. Please see the PC Peek User Guide for more information.

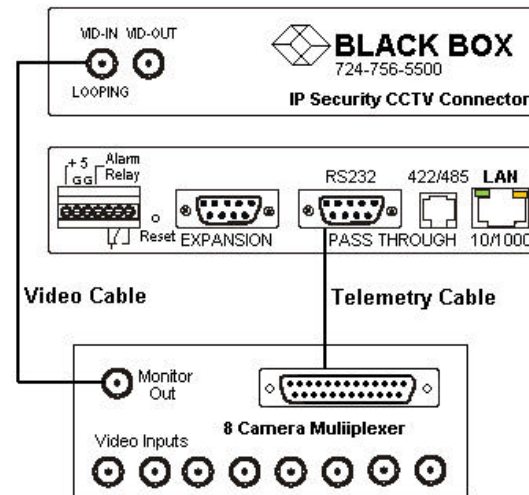


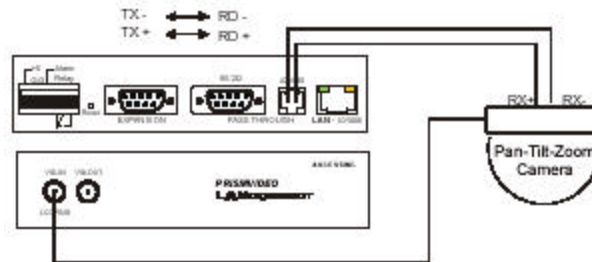
Figure 7 Connecting to a Multiplexer

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### ***Pan-Tilt-Zoom Cameras***

One PTZ camera can be connected to the LC1003A. More PTZ devices can be controlled using the output of a peripheral device such as a matrix switch, which can control up to sixteen PTZs.

**Step 1:** Connect the RS232 or 422/485 port of the LC1003A to the receiver driver of the PTZ. (Figure 8)



**Figure 8 Connecting to Pelco Dome Camera**

**Step 2:** Assign the dome its own unique ID number using the dip switches. If you are connecting to a Pelco PTZ, set dip switches to program protocol P. See your PTZ documentation for more details.

**Step 3:** Connect the video output of the PTZ camera to VID-IN on the LC1003A.

**Step 4:** Open the software application PC Peek.

**Step 5:** In PC Peek, set the pass-through port settings according to the peripheral device's documentation. Please see the PC Peek User Guide for more information.

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**Step 6:** Using the same ID number that was programmed in the PTZ, set up a camera ID under the SysAdmin/PTZ tab. PC Peek is required to program the settings onto the LC1003A. After the LC1003A has been programmed, it can then be accessed/controlled with Install/Viewer software.

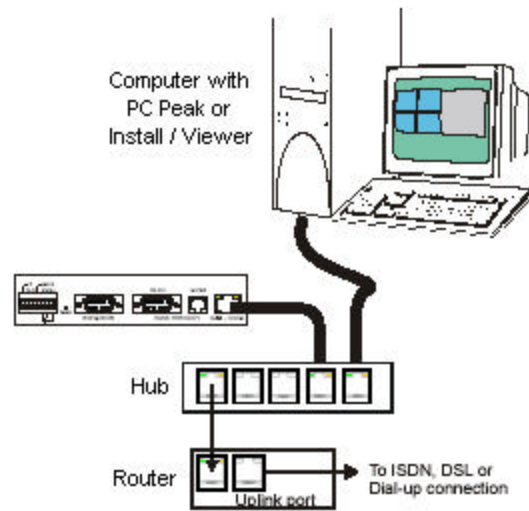
### ***Matrix Switch***

**Step 1:** Connect the video outputs from the cameras to Video In on the matrix switch.

**Step 2:** Connect the matrix switch's Video Out to VID-IN on the LC1003A.

**Step 3:** In PC Peek, set the pass-through port settings according to the peripheral device's documentation. Please see the PC Peek User Guide for more information.

## Connecting to a Network



**Figure 9 Network Connections**

Using LAN RJ-45 connector from LC1003A, connect to the RJ-45 connector of the hub of an existing 10/100 base-T digital Ethernet interface.

Assign each camera a unique IP address. See the next chapter.



# Assigning an IP Address

## *Introduction*

The LC1003A is not shipped with an IP address. One must be assigned before a connection can be established.

**IMPORTANT!** Enlist the help of your System Administrator when assigning the IP address.

**IMPORTANT!** Once assigned, do not lose the LC1003A's IP address. If you do not have the IP address, you cannot connect to the LANcam. We recommend placing a label with the IP address on the LC1003A.

## *Definitions*

### **Host**

On the Internet, a host is any computer that has full two-way access to other computers on the Internet. A host has a specific "local or host number" that, together with the network number, forms its unique IP address. If you use PPP to access your ISP, your PC has a unique IP address for the duration of the connection to the Internet, and your computer is a host for that period. In this context, a host is node in a network.

### **MAC Address**

On a LAN, the Media Access Control (MAC) address is your computer's unique hardware number. On an Ethernet LAN, the MAC is the same as the PC's Ethernet address. When you're connected to the Internet from your computer, a correspondence table

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relates your IP Address to your computer's physical (MAC) address on the LAN.

The LC1003A's MAC address is on the LC1003A label. Please locate this address.

### **ARP**

Address Resolution Protocol (ARP) maps an IP address to a physical machine (MAC) address that is recognized in the local network.

### ***Set Up***

It is recommended that the LC1003A and the PC with which you will program the LC1003A's IP address be placed on their own network.

**Step 1:** Disconnect your PC from the current network.

**Step 2:** Connect the PC to a free hub.

**Step 3:** Connect the LC1003A to the hub. Your network should now consist of your PC, the hub and the LC1003A only.

### ***Turning off your PC's DHCP Client***

When you use BLACK BOX Inc.'s DHCP Server, you must turn off the DHCP client on your PC. A PC that is connected to a network typically uses a DHCP Server to provide its IP address.

**Step 1:** On your PC's desktop, right-click Network Neighborhood. Select Properties from the menu that appears. (If this is disabled, please see your System Administrator).

**Step 2:** Under the Configuration tab on the Network dialog box that appears, Highlight TCP/IP on the "Following Network

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Components Are Installed" list (You may have to scroll down to see it. If you are never connected to a network, you will not see this. If you have two Ethernet cards, you will see two entries. Select the card that you are currently using).

**Step 3:** Click the Properties button. The TCP/IP Properties dialog box will appear.

**Step 4:** Select the IP Address tab. Two choices will be offered – “Obtain an IP address automatically” (If this is currently selected, then your PC uses DHCP to obtain its IP address) and “Specify an IP address”.

**Step 5:** If your machine is connected to a network, it has an IP address. You need to know what it is.

**Step 6:** Select “Specify an IP address” and enter the PC's address and subnet mask in the Fields. Click the OK button.

### ***Installing a Temporary IP Address***

**Step 1:** Ensure that the LC1003A is powered down.

**Step 2:** Start the DHCP Server software and enter IP address, subnet mask and gateway information. The IP address should not conflict with any other addresses on the network - it must be unique.

**Step 3:** Click the Finish button.

**Step 4:** Power up the LC1003A. The LC1003A now has a temporary IP address. If the power is cycled the LC1003A will lose the IP address that was provided and the previous steps will need to be repeated.

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### *Installing a Permanent IP Address*

- Step 1:** Start Install/Viewer (supplied on diskette with LC1003A). In the Phone Book (found in the Control Folder), click the Manual Connect button.
- Step 2:** In the Manual Connect dialog box that appears, enter the IP address that you provided in the DHCP Server software and ensure that the port is set for 2571. Click the Connect button.
- Step 3:** When you are asked, "Import LC1003A's configuration into your database?" click the OK button.
- Step 4:** Select the SysAdmin tab on the Control Folder. Select the new LC1003A from the Video Transmitter Configurations list and then click the View/Edit Entry button. The LC1003A Configuration dialog box will appear. Select the Connection tab.
- Step 5:** In the TCP/IP section of the dialog box, uncheck both Echo Client Enabled and DHCP Enabled. At the bottom of the dialog box, check Remote Update Enabled. Click the Save button found in the bottom right corner of the dialog box.
- Step 6:** On the Video Window, select Export Configuration from the Action menu. Click the Yes button on the message box.
- Step 7:** You will be asked to "Disconnect for your changes to be in effect," click the OK button. This will give the LC1003A a static IP address, which will survive power on/off cycles.

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### ***Turning on your PC's DHCP Client***

If you had to disable the DHCP client in the beginning steps, enable it by selecting "Obtain an IP address automatically" under Network Neighborhood properties.

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