

# User's Manual



***DAGE-MTI***

***Investigator***  
**CCD Camera Gater &  
Frame Grabber**

# Purchaser's Record

**Model Name:** *DAGE-MTI Investigator*

**Serial Number:**

**Dealer's Name:**

**Dealer's Address:**

**Dealer's Phone Number:**

**Date Purchased:**

**P.O. Number:**

# Introduction

The ***DAGE-MTI InvestiGater*** provides a solution of obtaining low light level images from ***DAGE-MTI*** monochrome CCD cameras by gating, grabbing and then displaying the resultant image to a monitor. This single box image capture solution is done without the need of a computer.

The ***InvestiGater*** seamlessly interconnects with the ***DAGE-MTI CCD100*** and can also be used with other ***DAGE-MTI*** monochrome CCD Cameras such as the ***CCD-300RC***, ***CCD-72AS*** and the ***IR-1000*** models.

The ***InvestiGater*** and CCD Camera package provides a complete imaging system for any situation. A superior image can be obtained regardless of the scene. If real time imaging is important, the automatics of the CCD Camera will react with the scene to produce the best of images. When the noise of a low-light image becomes a problem: no problem! The ***InvestiGater*** gates the camera and captures a low noise image. The ***InvestiGater*** even tells you when the image is right.

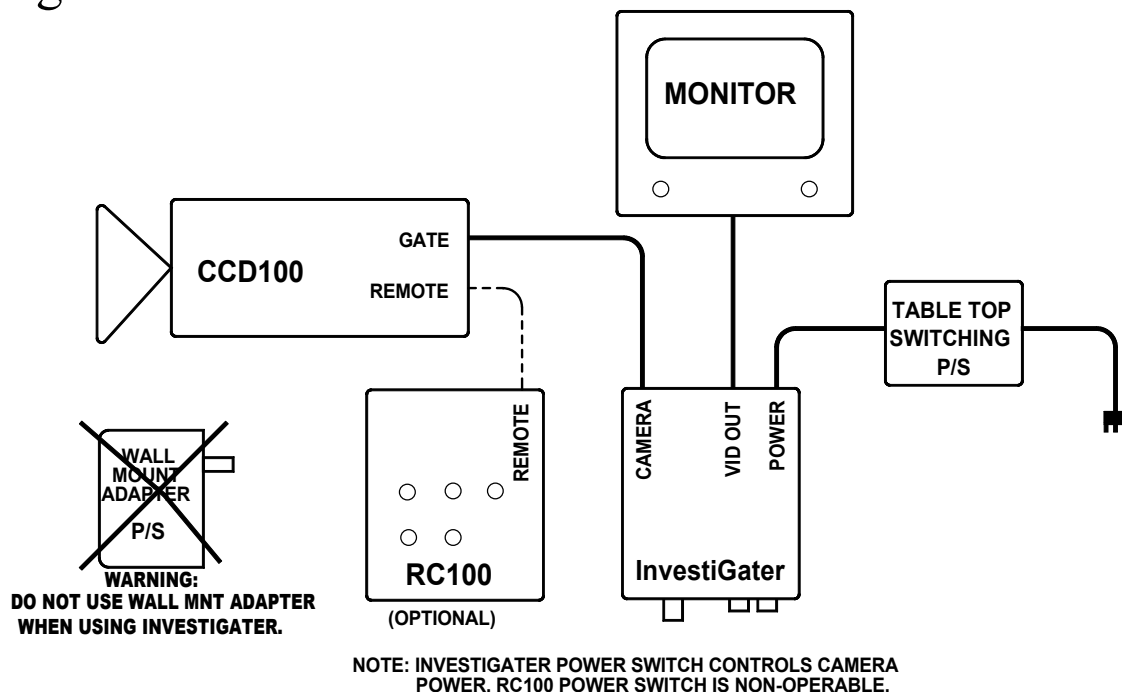
***DAGE-MTI offers our customers state-of-the-art video technology... with an eye on your image.***

# Installation

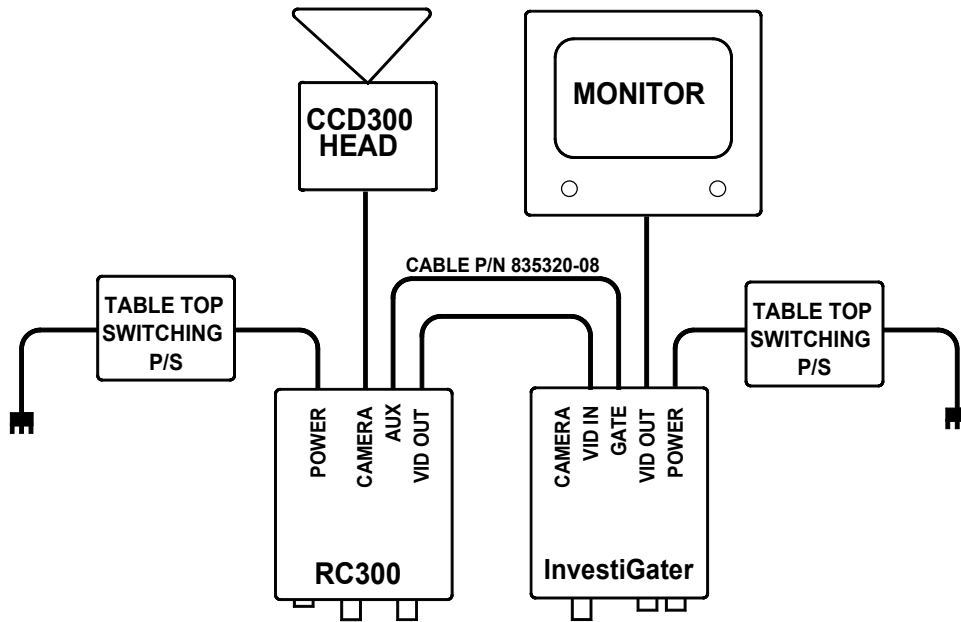
The **InvestiGater** easily connects to the **CCD100** through a single cable. This standard S-video type cable (Dage P/N 737980-01) provides Power, Gate and Video connections between the instruments. Since the **InvestiGater's** power supply provides power for both units, do not use the **CCD100** power supply. Figure 1 shows the connection of the **InvestiGater** to the **CCD100**.

Figure 2 shows the **InvestiGater** connected to the **DAGE CCD-300RC**. The **CCD-300RC** needs an **Aux Gating Cable** (Dage P/N 835320-08), which is included with the cooled models. Note in this configuration both units need a power supply connection.

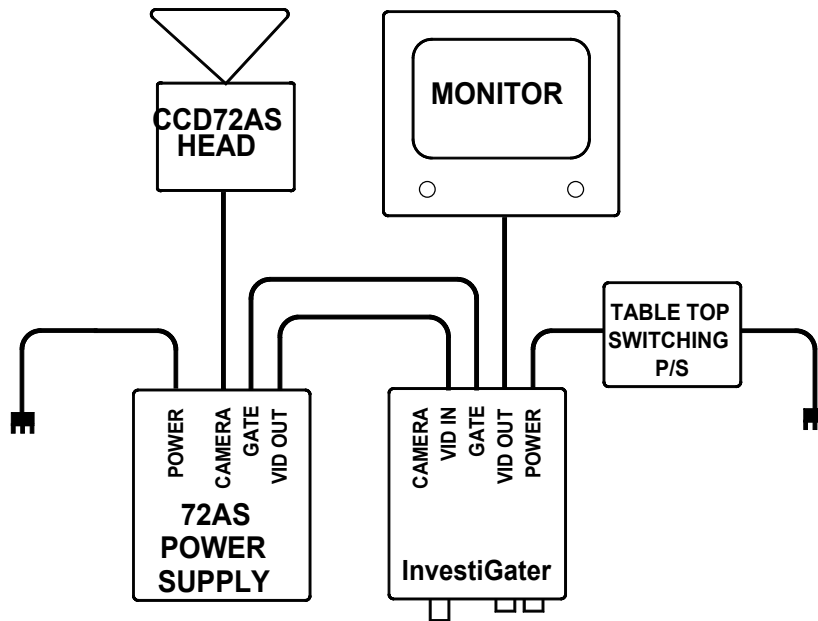
Figure 3 shows the **InvestiGater** connected to the **DAGE CCD-72AS** or another CCD Camera which uses a BNC type Gating connection.



**Figure 1: InvestiGater/CCD-100 Connection**



**Figure 2: InvestiGater/CCD-300RC Connection**



**Figure 3: InvestiGater/CCD-72AS Connection**

# Operation



Figure 4: Dage-MTI *InvestiGater* Front Panel

The *InvestiGater's* front panel allows the user to switch between the stored image and the incoming **LIVE** image. The gating of the CCD camera is controlled through the front panel's **GATE TIME** switch and the **SIG LEV** indicator tells when the output video is the correct level.

## POWER

The *InvestiGater's* power is turned on and off by this switch. The green LED above the switch lights when the unit is on. The *InvestiGater* provides a shunt video path through the unit even when the power is off. When the *InvestiGater* is attached to the **CCD100**, this switch controls power to both.

## GATE TIME

This switch controls the time that the camera will be gated. The unit allows gating times from 4 frames (1) to 2048 frames (MAX). The switch doubles the gating time for each position. The gating cycle is initiated by the **ACT** front panel switch.

## **SIGNAL LEVEL**

The output video level of the *InvestiGater* is sensed and drives the **SIG LEV** LED. The LED lights Yellow when the output video is too low, Green when it is right, and Red when it is too high. This ensures that the image output is always right.

## **ACTIVATE**

This pushbutton switch works with the **GATE TIME** switch and the rear panel **SGL/RUN** switch to control the gating process. To initiate a gating sequence, merely push the **ACT** button. The green LED above the switch lights, showing that gating is occurring. When the gate cycle has been completed, the light turns off. When in the **RUN** mode, another gating cycle automatically begins.

The **ACT** button works in conjunction with the **LIVE** switch. If the *InvestiGater* is actively gating when the **LIVE** button is pressed, the gating process is halted and the live image is displayed. If while in the **LIVE** mode the **ACT** button is pressed, the gating process will begin and the memory contents will be displayed.

## **LIVE**

The **LIVE** button allows the selection of input video being displayed on the output of the *InvestiGater*. The **LIVE** button can be used to toggle between the un-gated incoming video and the captured gated video. When the unit is initially turned on, it will be in the **LIVE** mode.



**Figure 5: Dage-MTI *InvestiGater* Rear Panel**

## **SGL/RUN**

This switch determines whether the gating process of the *InvestiGater* is a single event or an ongoing continuous affair. In the **SGL** mode, upon pressing the front panel **ACT** switch, one gating cycle is produced and the resulting video is displayed. In the **RUN** mode, the gating process is initiated by the **ACT** switch, but the gating process is in a series of "snapshots" that are updated each gating period. This gating process can be halted by either pressing the **ACT** button or switching to the **LIVE** mode.

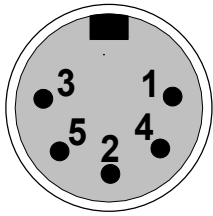
## **POWER IN**

This 5-pin 'DIN' connector receives DC power from the external switching power supply. The supply plugs into an appropriate AC outlet and provides all of the necessary voltages to the *InvestiGater* and **CCD100**. The external switching supply accepts either 50Hz. or 60Hz. input power in the range of 85 to 250VAC.

### **NOTE:**

**The external power supply has no user accessible parts. Refer maintenance to a qualified technician.**

Pin-out of the **POWER** Connector is as follows:



<u>PIN #</u>	<u>FUNCTION</u>
1	<b>GND</b>
2	<b>GND</b>
3	<b>+5V Power In</b>
4	<b>-12V Power In</b>
5	<b>+12V Power In</b>

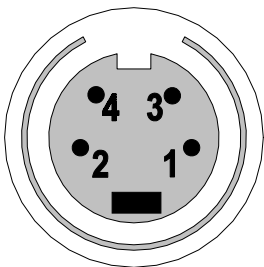
## TEC

This 2.1mm DC power jack connector provides power to an optional **CCD100** that has cooling capability. The power to the camera's cooler is monitored to provide a constant current to the unit. The center pin is positive polarity.

## CAMERA

This 4-pin 'MINI-DIN' connector provides the complete interconnection between the **InvestiGater** and the **CCD100**. Power and gating to the **CCD100** and video from the camera are provided. The cable interface is a standard S-Video type cable, Dage P/N 737980-01.

Pin-out of the **CAMERA** Connector is as follows:



<u>PIN #</u>	<u>FUNCTION</u>
1	<b>GND</b>
2	<b>Power Out (+12V@200mA)</b>
3	<b>Video In</b>
4	<b>Gate Out (+5V=Readout; GND=Gate)</b>



## VIDEO IN

The camera's video is placed into the *InvestiGater* either through this BNC or through the **CAMERA** connector. Care should be taken so as to not attempt to place two video sources into the *InvestiGater* at the same time. The video input signal is terminated into  $75\Omega$ . The monochrome composite input video signal should comply with either EIA RS-170A (525/60) or CCIR (625/50) video signal standards.

## VIDEO OUT

The video output of the *InvestiGater* is available at this BNC connector. The video has a source impedance of  $75\Omega$  and provides 1V p-p output. The **VID OUT** output is determined by the front panel switches. Either the **LIVE** input video or the captured gated video is available. Care should be taken to avoid no termination or double termination of the output video, which would result in incorrect video levels.

# Specifications:

**Resolution:** 756(H) x 480(V) x 8 bits (RS-170)  
754(H) x 580(V) x 8 bits (CCIR)

**Pixel Clock Freq:** 14.318 MHz (RS-170)  
14.1875 MHz (CCIR)

**Gating Time:** 4 Frames to 2048 Frames in 2X intervals

**Video Input:** EIA RS-170A (525/60); 1V<sub>pp</sub> into 75Ω,  
or CCIR (625/50); 1V<sub>pp</sub> into 75Ω.

## **Signal Level LED:**

**Yellow:** Light level or Gate Time too low

**Green:** Light level or Gate Time correct

**Red:** Light level or Gate Time too high

**Voltage Input:** 85VAC to 250VAC, 50/60 Hz.

## **Size:**

**Control:** 5½" (W) x 1½" (H) x 8" (D)

**Power Supply:** 2½" (W) x 1½" (H) x 5" (D)

## **Weight:**

**Control:** 1.6 lbs.

**Power Supply:** 0.7 lbs.

# Troubleshooting

## No Power Lights (Check or try the following):

1. **InvestiGater** Power Switch On?
2. External Power Supply Attached?
3. AC Power On?

## No Picture (Check or try the following):

1. **InvestiGater** in **LIVE**?
2. Camera Power On?
3. **InvestiGater/CCD100** Cable Attached?
4. Light Level Too Low?
5. Camera Lens Open?
6. Monitor Connected to **VID OUT**?
7. Monitor Power On?

## Picture Saturated (Check or try the following):

1. Video Output Cable Terminated Into 75Ω?
2. Light Level Too High?
3. **GATE TIME** Set Too High?

# Warranty

The ***DAGE-MTI InvestiGater*** is warranted to be free of defects in material and workmanship in normal use for a period of one year from the original date of purchase from ***DAGE-MTI***.

This warranty does not apply to units which have been subject to abuse, neglect, accident, improper installation, or on which the serial number has been removed or damaged. Units that have been altered without the prior permission of ***DAGE-MTI*** are not covered by this warranty.

This warranty does not apply to other equipment furnished by ***DAGE-MTI***, which is listed or otherwise identified as manufactured by another and therefore shall be covered by the other manufactures' applicable warranty.

# Limitations

1. This warranty is valid only if the malfunctioning unit is returned to *DAGE-MTI* service depot. This warranty does not cover on-location service. If warranty work is needed, the following should be contacted:

***DAGE-MTI, INC.***

Customer Service

701 N. Roeske Ave.

Michigan City, IN 46360

(219) 872-5514

Fax: (219) 872-5559

Email: [service@dagemti.com](mailto:service@dagemti.com)

2. This warranty does not cover:
  - a. Problems caused by or inflicted upon associated equipment such as digitizing systems, video tape recorders, cameras, microscopes, etc.
  - b. Damage caused by accident, misuse, improper power source, fire, flood, lightning, other acts of God, war, and repair or alteration by other than a *DAGE-MTI* authorized service organization.
  - c. Labor or incurred charges required in removing or installing the Product, down time, failure of the Product to perform properly, and any consequential damages.
  - d. Transit damage.
3. Unit must be properly packaged (in original packing, if possible) when being returned under warranty.

***DAGE-MTI Inc.***

**701 N. Roeske Ave.**

**Michigan City, IN 46360**

**(219) 872-5514**

**Fax: (219) 872-5559**

**E-mail: [dage@dagemti.com](mailto:dage@dagemti.com)**

**<http://www.dagemti.com>**

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