Appendix C - User's Manual

FCC NOTICE

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.
OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,
INCLUDING INTERFERENCE THAT MAY CAUSE UNDERSIRED OPERATION.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit difference from that to which the receiver is connected.

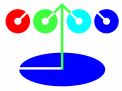
- Consult the dealer of an experienced radio/TV technician for help.

NOTE : The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

MG444

recording system

USER'S MANUAL



Darim Vision Co.,Ltd.

1. General Information

1.1. Introduction

MG444 makes it possible to build up a digital video security system with ease using PC at home or a small office. Your PC will play the role in protecting you and your office in addition to its general function of PC. While you are away from home or office, MG444 will watch your place. Just connect CCTV camera (or a camcorder or CCD camera) to the MG444 and run it. All the movement during your absence will be caught and recorded as high quality digital video.

Since MG444 adopted the state-of-the-art algorithm that starts to record the video only when a motion is detected and compress it by high quality compression method (MPEG1), it has optimized the storage space for the video data at minimum size. This compression is performed in real-time on CPU with MMX only by software without expensive hardware encoder. This was realized for the first time in ther world thanks to MPEG compression core technology Darim has accumulated for years. As multi-channel video inputs are popular in general security environment, MG444 enables to compress and store upto 4 channels simultaneously in order to meet its needs, which means to establish a new culture in multi media world of digital information.

1.1.1. System Requirements

- IBM PC/AT compatible computer with Intel Pentium™ CPU 166 MHz or better supporting MMX.
- 16 MB of system RAM. More is recommended for better overall system performance.
- 1 empty 32-bit PCI slot with bus mastering capability
- Microsoft® Windows® 95 or 98.
- Data storage requirement is about 300 MB per hour in continuous recording.

1.1.2. MG444 Card Specification

- Plug and Play
- Resolution : 320x240, 160x120
- Capturing in MPEG 1 up to 15 frame/sec
- Contrast, Hue, Saturation control
- 4 asynchronous NTSC/PAL composite video inputs

1.1.3. Software Specifications

- User friendly intuitive grahpical interface
- Real-time multi-channel MPEG 1 video compression by CPU only
- Motion detection-triggered recording for minimal usage of storage space
- Simultaneous preview & recording for any selected channel
- Independent camera properties control, frame rate & compression quality setting.

2. Installing MG444 System

2.1. Hardward Installation

Hardware installation of MG444 has been made easy due to the built-in Plug and Play capability of all PCI devices. There are no jumpers on the board that you have to worry about. Also, because of its very small dimensions, the board will not be obstructed by any device on the mainboard located in line with the PCI slots (e.g. the CPU fan and heatsink). Even modern notebook computers and high performance docking stations with PCI slot are suitable for MG444 board. As you can see in Figure 1., there are 4 BNC connectors for video camera inputs.

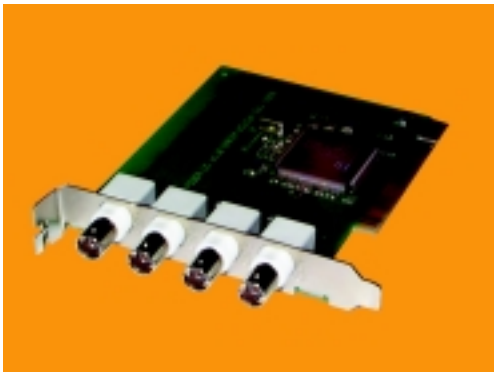


Figure 1. External view of MG444 board

2.1.1. Installing MG444 Card

To install your MG444 board:

1. Make absolutely sure that your PC power is **off**. Then proceed to open the cover of your PC to expose the interface slots on the motherboard.
2. Remove the screw and the backpanel plate for the selected PCI slot. Plug the board into this slot. Push the card into the slot firmly. Make sure that the card is seated correctly as far into the slot as possible.

3. Secure the interface card to the computer case with the retaining screw and close the computer cover.

After you have successfully installed MG444 board in your computer, you must make the connections to the video camera.

2.2. Software Installation

2.2.1. *Installing Plug and Play driver*

Driver Installation in Windows 95

After the hardware installation is finished, turn on your computer and start Windows. You are now about to install the MG444 drivers to your system. The following sections cover the setup process in Windows 95, including details specific to the *OSR2* version of Windows 95.

In both versions of Windows 95, the first required step is to tell the system about the new hardware that you have just installed. Since the MG444 board is truly Plug and Play, Windows 95 will automatically detect its presence and display the message shown in Figure 1. The OSR2 version will display the message shown in Figure 2.

Figure 1. New Hardware driver installation dialog in original Windows 95

Select **Driver from disk provided by hardware manufacturer** and click *OK*. When prompted for the driver location, type in the path where you are installing the software from (e.g. *A:*\). Or click on the *Browse* button to locate MG444 software using disk drives and directories tree.

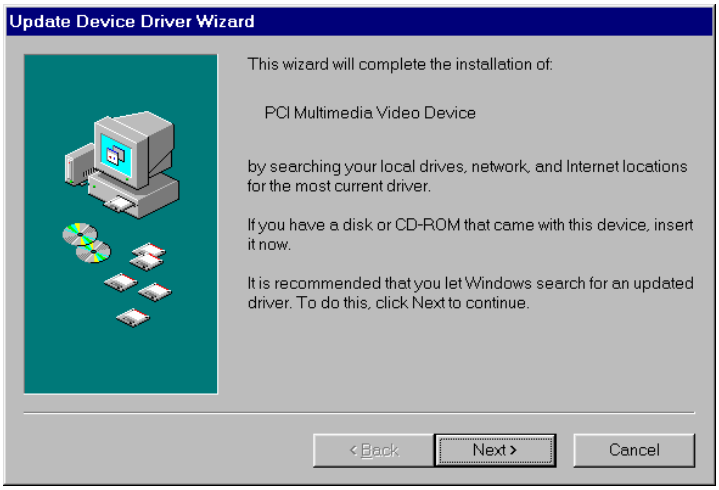


Figure 2. New Hardware driver installation dialog in Windows 95 OSR2

In OSR2 simply click on the **Next >** button. The operating system will search the diskette and CD-ROM drives automatically. If the search has failed, you will need to browse drives and directories tree (by pressing the **Have Disk** or **Other Locations** buttons) to find the drivers manually. Finally, click *OK* (or *Finish* in the case of OSR2) to copy and install the necessary device drivers. Note that at this point you will be asked to reboot your computer to actually complete this phase of installation.

Important: This phase of the installation is very critical for correct Spier SE software functionality. Failure to complete this step will lead to error messages. Please refer to the *Installing the capture driver manually* and *Troubleshooting* sections for possible remedies.

If the installation has been performed exactly as described above, skip the next section and proceed directly to Chapter 2.2.3.

Installing the capture driver manually

If the low level driver installation procedure was carried out correctly there would be no need to know how to install the driver manually since this would be done automatically in accordance with the process described above. However, in real life, things can go wrong, partially due to the fact that those devices which do not have the corresponding drivers supplied with Windows 95 still require some user interaction.

Unfortunately, it can be rather difficult to correct a mistake during the initial installation. Listed below are some examples of common mistakes:

- You have chosen the **Do not install a driver...** line in the above dialog.
- The installation diskette or CD-ROM was unavailable during Windows 95 startup, or the drive was not functioning properly.
- You have aborted the installation process by pressing the *Cancel* button.

In these cases, you need to help Windows locate and install the appropriate drivers because the *New Hardware driver installation dialog in original* Windows 95 shown in Figure 1 or Figure 2 will appear only once - during the first installation. You can do this manually by performing the simple steps below:

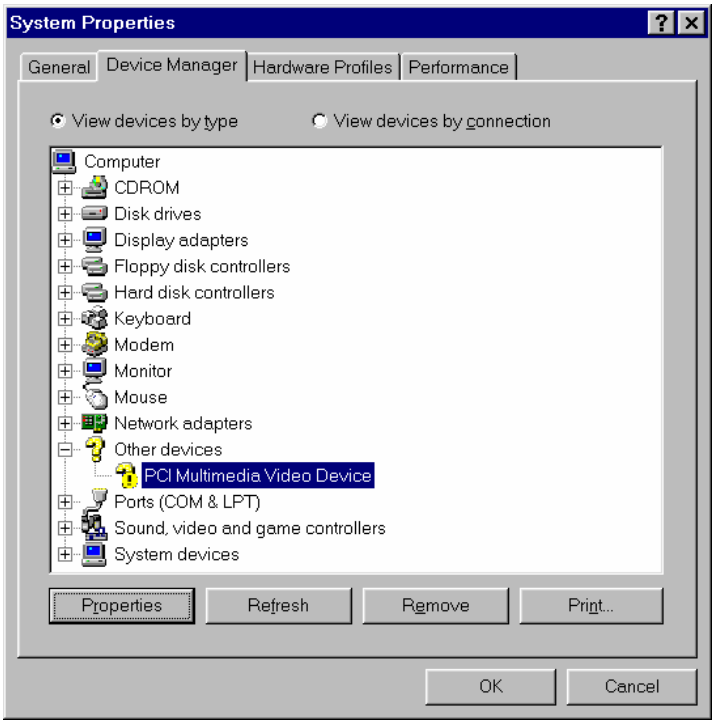


Figure 3. Locating an unidentified Telegeny device

- Run Windows 95 *Control Panel* and double-click on the *System* icon.
- Click on the *Device Manager* tab to see a dialog similar to the one shown in Figure 3.
- Locate and double-click on the *Other devices* branch, shown with the yellow question mark (**?**). You should see a device labeled *PCI Multimedia Video Device* among the other devices in the group (see Figure 3). This is a generic name assigned to MG444 card by the system.
- Double-click on this line to bring up the device properties sheet (as shown in Figure 4).

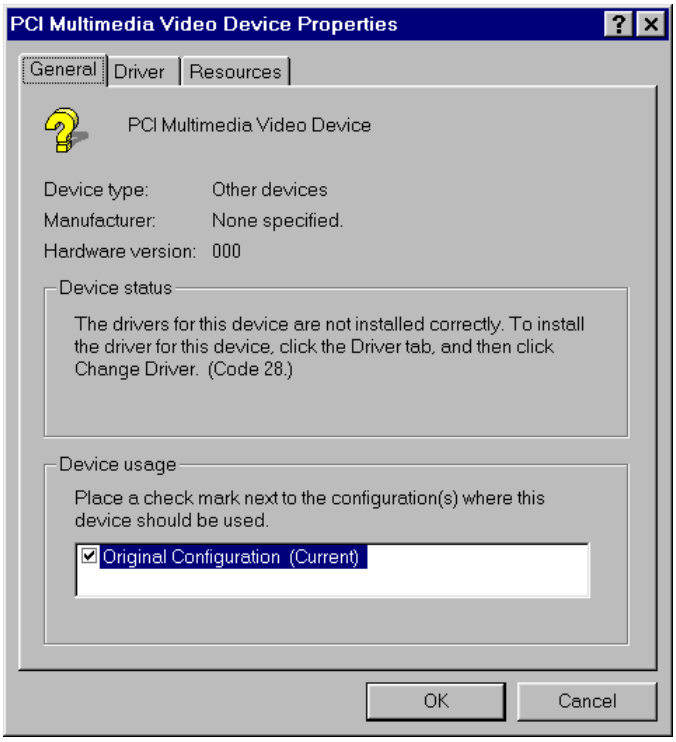


Figure 4. Unidentified Telegeny device properties sheet

- Select the *Driver* tab and click on the *Change Driver* (*Update Driver* in the OSR2) button.
- In Windows 95: When prompted to select hardware type, select *Other devices* and click *OK*. Click on the *Have Disk* button and specify the location of the Telegeny installation files. If necessary, use the *Browse* button to locate the software.
  In OSR2: The diskette and CD-ROM drives will searched for the necessary files automatically. If not found, you will need to specify proper location using the *Browse* button.
- After the required files are located, choose the MG444 line and click *OK* several times to install the driver and restart the system. Note that the system needs to be rebooted to complete the installation.

When the Plug and Play driver is installed, the generic *PCI Multimedia Video Device* labeled

with a question mark will disappear from the Windows 95 Device Manager's hardware list. Instead, the new device, named MG444, will appear in the *Sound, video and game controllers* branch. Should you ever need to view or change the properties of the MG444 hardware in Windows 95, refer to this device line in the Device Manager's list. Normally, you will not need to do this, except during troubleshooting.

2.2.2. Installing Operation Software

The MG444 software is available in easy to install form on a diskette, CD-ROM or electronically on the Internet. Before installing operating software, make sure to complete the steps described above. Then proceed according to the instructions below.

The MG444 software installation can be done in either of two ways described below:

Using the Windows Explorer

1. Click on the drive icon containing the installation media (e.g. *A:*)
2. Locate the *SETUP.EXE* program among the other files in the active directory window.
3. Double-click on it.

Using the *Run* command

1. Click on the button on the Windows 95/98 toolbar.
2. Select the *Run* command
3. In the *Command* field type in the drive letter of the installation media followed by colon, back-slash and *SETUP.EXE* (e.g. *A:\SETUP.EXE*) or use the *Browse* button to locate and select *SETUP.EXE*.
4. Press ENTER.

3. Software Operation Instructions

3.1. Running Application Software

The MG444 program group in Figure 6. will be also created automatically during the setup process. After running FourEyes, you will see the operating software shown in Figure 7.

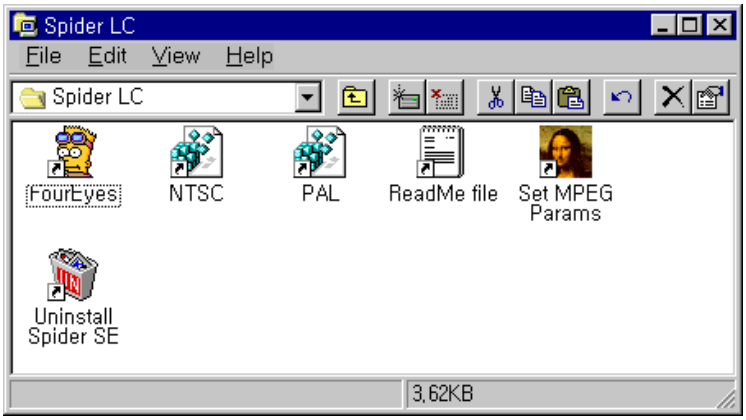


Figure 6. MG444 program group

After installation of application software you need to select which kind of video input will be used, either NTSC or PAL. Please run NTSC.reg or PAL.reg for proper operation and it will update the registry information. You need to run it once after installation or whenever the different video input is used.

On running MG444, the equally divided four screens will appear. They will be named as camera 1 from upper left. You can control the various functions like frame rate, sensitivity, compresion ratio and start & stop recording by using the buttons on the left bar.

Figure 7. Screen shot of MG444 operating software

3.2. Tool bar for MG444 software

3.2.1. General configuration about video input and capturing

If this button is clicked, menu screen like Figure 8 will show up. General setting about each video input channel will be done here.

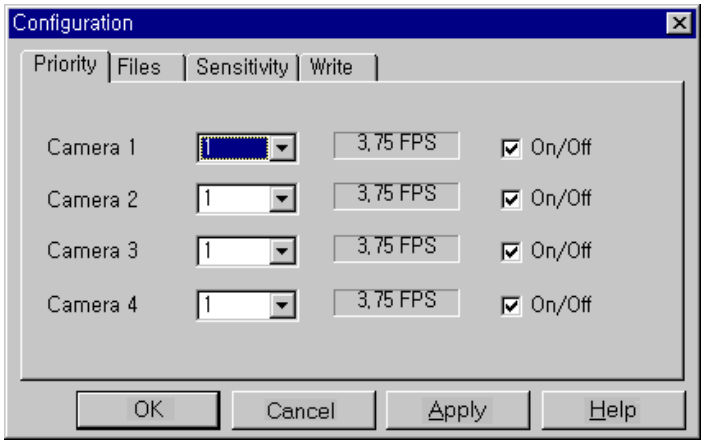


Figure 8. Menu for general configuration of video input and capture

Priority

Set up priority of each camera.
Since MG444 captures up to total 15 frames per second for every vdeo inputs, priority needs to be given to each camera. You can say it is similar to frame rate for preview. That is to say, higher priority may be allocated in camera 1if it is the area of greater importance. Once the priority for one camera is fixed, the frame rates of the remaining cameras will be reconfigured depending on each priority. This process will be done automatically and a total frame rate of the whole input cameras will be 15 anyways. You can put the desired number on the combo box to give priority to respective camera. The higher the number is, the higher its priority is given. You can select the connection of camera by checking On/Off box.

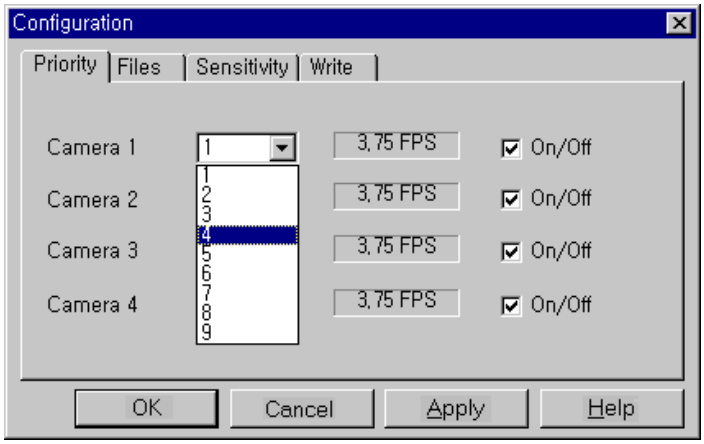


Figure 9. Priority setting menu

Files

You can choose the file and directory name for digital video file saved. The created MPEG file will be saved in that directory with specified file name and channel number(c0~c3) & date will be automatically attached to file name.

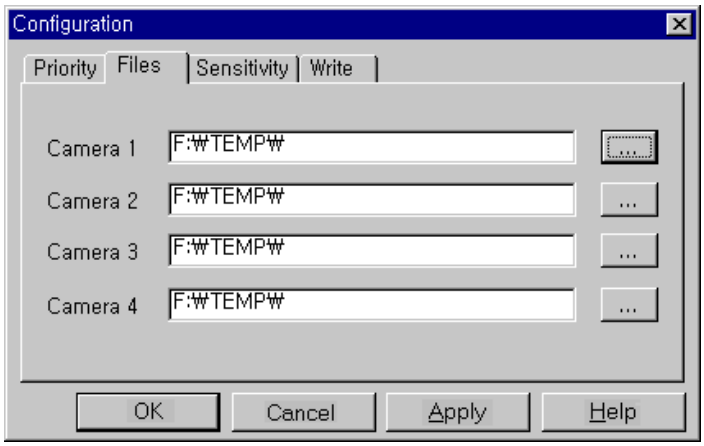


Figure 10. Files setting menu

Sensitivity

You can set the degree of sensitivity for motion detection. MG444 provides the function to record automatically only when a motion is detected through video image without any other extra sensors. The sensititvity for each channel needs to be set up in advance and the higher number stands for higher sensitivity.

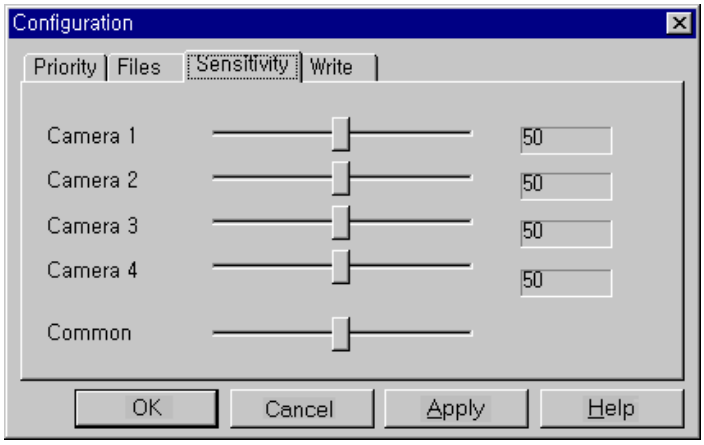


Figure 11. Sensitivity setting menu

Write

Set the configuraton for capturing mode. You may select everything as continuous recording or select Changes Only in case of motion detection activated recording. As for the case to capture the image at constant interval, the desired interval needs to be selected. This can be set on each camera respectively.

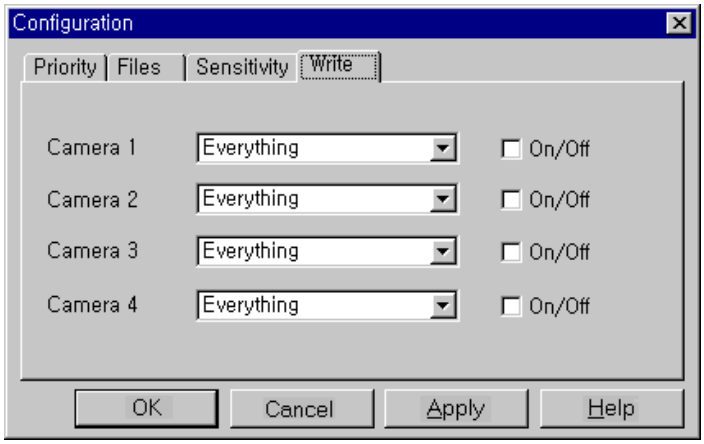


Figure 12. Write setting menu

3.2.2. Setting of MPEG compression parameters

Set the detailed parameters regarding MPEG compression. If this button clicked on, Figure 13 for MPEG parameter setting will appear.
Use 'Set all to default' to set up only. Please select 'Low quality', 'Average quality' or 'High quality' among them. Generally speaking, 'Low quality' produces the minumum file size and 'High quality' produces the best video quality. It means that the quality and the compression rate are reversely propotional. So to speak, the higher quality image requires the bigger data size due to less compression. The parameters should be carefully selected considering the available storage space.

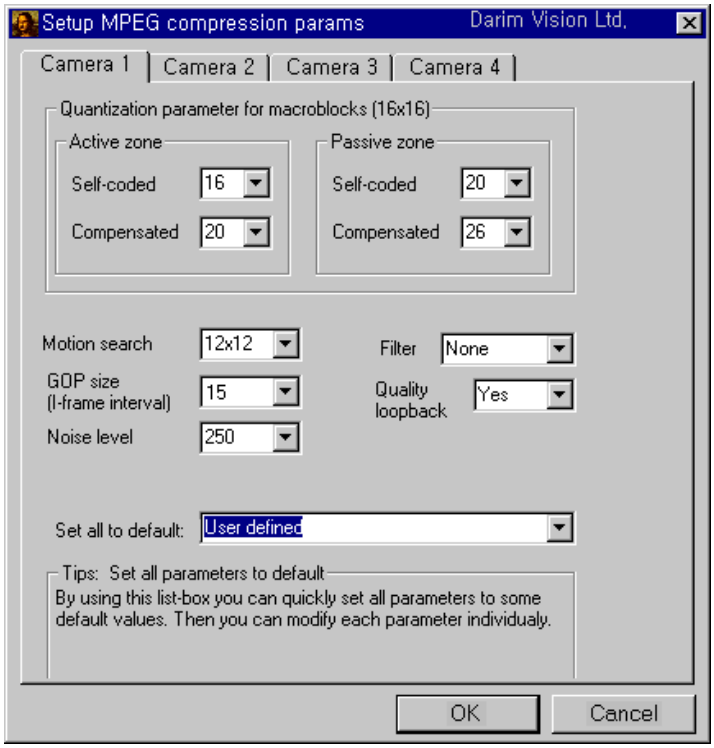


Figure 13. Setting menu for MPEG compression parameters

3.2.3. *Setting of motion detection zone*

Set the area for motion detection. MG444 provides the motion detection function without any external sensor. If the button is clicked, the pre-defined motion detection zone willl show up. It is possible to remove the detection area by dragging the left mouse button on and to define a new zone by dragging with the right mouse button on.

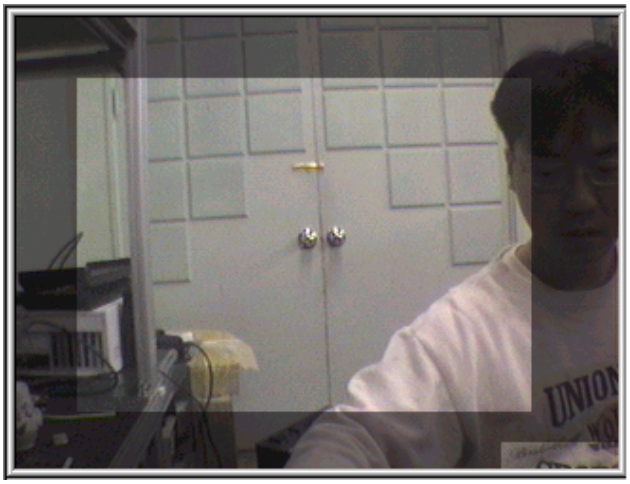


Figure 14. Example screen for setting of motion detection area

Figure15 shows the case of motion detection activated recording. 'REC' on the upper right side shows active video recording.

Figure 15. Example screen of capturing by motion detection

3.2.4. Start & stop of recording

This button is used to start recording. If the left button of the mouse is clicked on each screen, the menu shown in Figure 16 appears and you can start the recording either.

Figure 16. Example Screen ready for recording

This button stops recording.

In order to play back the recorded video, please select the playback command as shown on Figure 16. You can playback each channel video and one example is shown in Figure 17.

Figure 17. Example playback screen

4. Troubleshooting

4.1. Common Problems and Solutions

1. PC is down when you start recording by using of MG444 operating software

Please make sure that MG444 works only on the PC installed with MMX CPU. It is because operating software of MG444 is designed to use MMX functions during software MPEG compression in real time. In case tthat PC is not equipped with non-MMX CPU(including Pentium Pro), please install MG444 board to either MMX or Pentium II PC.

2. Proper IRQ is not assigned to MG444 board after driver installation

Enter into CMOS setup menu during PC boot-up by pressing proper key like del or F2. And set *Plug and Play OS* as '***No***' on the menus of PNP/PCI Configuration.

4.2. How to get updated software and Technical support

MG444 software is being constantly improved. To find the most updated versions, visit our WWW home page or anonymous FTP site. The addresses are as follows:

Darim Vision support page:
http://www.darvision.com/support/spiderlc.html
- in USA
http://darvision.kaist.ac.kr/support/spiderlc.html
- in South Korea

MG444 update files location:
ftp://ftp.darvision.com/pub/spiderlc - in USA
ftp://darvision.kaist.ac.kr/pub/spiderlc- in South Korea

Technical support team can be reached via

Phone:	(213) 637-1703	- for North and South America
	+82-42-861-2481	- for Europe and Asia
Fax:	(213) 637-1705	- for North and South America
	+82-42-861-2484	- for Europe and Asia
E-mail:	techsup@darim.kaist.ac.kr	

Please note that technical support staff will be able to help you more efficiently if you include the following information in your question:

- The basic computer configuration (CPU model and clock speed, amount of the physical RAM, display card model, other devices installed).
- The Windows OS type and version.
- All other details as necessary.

Darim technical support team will be happy to provide you with the best quality assistance to make you completely satisfied with MG444.

Installation guide for Windows2000

1) Make working directory and copy "TstAppR.exe", "Mg444_2K.inf" and "Mg444_sys" files to there.

2) Open the case of a computer, select any unused PCI slot and plug in the board.
    The whole process will be the same as for all other PCI cards.

3) Wait for the "Found New Hardware Wizard" window to appear. Click "Next".
4) From "Install Hardware Device Drivers"select "Display a list of the known drivers for this device .....".Click "Next".
5) From "Hardware Type"select "sound,video and game controllers".Click "Next".
6) From "Select a Device Driver" click "Have Disk..."
7) From "Install From Disk" click "Browse".
8) Select working directory which contains "Mg444_2K.inf" and "Mg444_sys" files.Select "Mg444_W2k.inf".Click "Open".
9) From "Install From Disk" click "OK".
10) From "Select a Device Driver" click "Next".
11) From "Start Device Driver Installation" click "Next".
12) From "Digital Signature Not Found" click "Yes".
13) From "Found New Hardware Wizard" click "Finish".

14) Reboot computer.Connect video sources for all videoinput using BNC-connectors.

15) Run TstAppR.exe.
     Application wiil test all video sources and check corresponding check-box ("Camera0-3") if videosource will be detected.
16) Use two buttons "Start Preview" and "Stop Preview" for starting and stopping live video preview.