Contents

Introduction

What is Eco9?

Eco9 is a cost effective and easy to use video multiplexer, digital video recorder, and network video transmitter in a one box solution.

A video multiplexer?

- Designed with security in mind.
- Easy to use.
- Operates like a traditional multiplexer, not a PC
- All the feature you would expect from a Dedicated Micros multiplexer:
  - Main and Spot monitor.
  - Multiscreen displays.
  - Activity detection.
  - Alarms.
  - Scheduling.
  - Variable record rates.

A digital video recorder?

- Playback and record simultaneously, without affecting recording
- 31 days or more of time-lapse recordings in one box*.
- Instant access to images recorded on the hard disk with no tapes

Network transmission?

- View live and playback images across the network.
- No extra software to buy, Network Viewing software for Windows™ provided.
- Copy images across the network

**Refers to the 300 GB model at default settings.*

Features:

Installation

Auto detect cameras on power up	✓
Auto detect external storage on power up	✓
Default recording	✓
Loop-through connections	✓

Operation

Play, record, copy and transmit simultaneously	✓
Hidden camera option	✓
Scheduling	✓

Playback

VCR style playback	✓
Full, Quad and PIP playback	✓

Events

Activity detection	✓
Alarms	✓
Event log with preview window	✓

Network Viewing

Live viewing	✓
Playback viewing	✓
Up to 5 network users at once	✓
Copy images across networks	✓
E-mail on event activation	✓

External storage devices

Yamaha/Plextor CDR (check for compatible models)	✓

The manual has three parts:

1. **Installing Eco9**
2. **Configuring Eco9**
3. **Using Eco9**

Important Safeguards

Read Instructions

All the safety and operating instructions should be read before the unit is operated.

Power Sources

This unit should be operated only from the type of power source indicated on the manufacturer's label.

Servicing

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Ventilation

Ensure unit is properly ventilated to protect from overheating.

WARNING

To prevent fire or shock hazard, do not expose this equipment to rain or moisture. The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of this equipment that there are dangerous voltages within the enclosure which may be of sufficient magnitude to constitute a risk of electric shock.

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

LIGHTNING STRIKE

The Eco9 has some inbuilt protection for lightening strike, however it is recommended that isolation transformers be fitted to the system in areas where lightening is a common occurence.

REGULATORY NOTES FCC AND DOC INFORMATION

(USA and Canadian Models Only)

WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the US Government Printing Office, Washington, DC20402, Stock No. 004-000-00345-4.

This reminder is provided to call the CCTV system installer's attention to Art. 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CE Mark

CE

This product is marked with the CE symbol and indicates compliance with all applicable directives.
Directive 89/336/EEC.
A "Declaration of Conformity" is held at Dedicated Micros Ltd., 11 Oak Street, Swinton, Manchester M27 4FL.

Installing eco9

BEFORE YOU START:

Check the contents of the box

The following items are included in the box:

- ❑ PSU
- ❑ Mains cable with three pin plug fitted (North America)
- ❑ Mains cable without plug fitted (other regions)
- ❑ Mains cable with two pin plug fitted (EC)

Choosing a location for installation

Eco9 is designed to be desk mounted. The following precautions must be taken when installing Eco9:

- Openings in the unit's case are provided for ventilation. To prevent overheating, these openings should not be blocked or covered.
- When stacking units, ensure there is at least a 1/2" (1.5 cm) gap between each unit.
- Ensure there is a 1" (3cm) gap on either side of the unit.
- Ensure the unit is not located in an area where it is likely to be subjected to mechanical shocks.
- The unit should be located in an area with low humidity and a minimum of dust. Avoid places like damp basements or dusty hallways.
- If using external storage, refer to the manufacturer's instructions for placement details.
- If the unit is to be installed in a closed assembly, the maximum operating temperature must not exceed 40^{o}C.
- Ensure there is reliable earthing of the mains outlet when fitted to supply connections other than direct connections to the branch circuit.
- When connecting the Eco9 to a branch circuit this must be rated 15Amps.
- It is recommended that a UPS (Un-interruptible Power Supply) be connected to the unit in case of power failure. This will ensure the continuous operation of the Eco9.

A quick overview of digital recording

Digital multiplex recorders work in exactly the same way as analogue multiplexers except that they use hard disks to store video, instead of VCR tapes. Analogue recording uses time-lapse recording to extend the length of time recorded onto 2 or 3-hour tape - recording fewer pictures every second.

Adjusting the number of pictures recorded every second also extends the length of time recorded onto the hard disk of a Eco9. However, other factors also determine the amount of time that can be stored on the disk of a digital multiplex recorder:

- The image quality
- The record rate
- The hard disk capacity

Image quality

Digital multiplex recorders store images in a compressed format, allowing images to be recorded more efficiently. The higher the compression, the smaller the file size, but the image quality will suffer. Eco9 can compress images between 6KB and 45KB.

Kilobytes and Gigabytes are units of storage:
1GB = 1024 Megabytes (MB)
1MB = 1024 Kilobytes (KB)

With analogue recording, the image quality is dependent on the type of VCR being used; VHS or S-VHS. Eco9 allows the image quality to be altered by adjusting the image size, for example, Low quality is 14KB, Medium is 18KB, and High is 25KB*.

Using a larger image size will fill the hard disk faster than a smaller image size, as more space is required to store it. To achieve the same amount of recording time when a larger image size is used requires the record rate (PPS) to be reduced.

* Note that as for all digital recording, image quality can vary for different scene types, Medium quality may be 18KB in one scene, but it may be 30KB or more to get the same quality in a scene with more detail.

Record rate

The record rate is the amount of pictures recorded to disk in a second, or pictures per second (PPS). This is a system wide figure, so whether 1 or 4 cameras are recorded, the record rate remains the same. The update rate per camera can be worked out using the record rate:

$$\text{Update rate} = \frac{\text{No. of cameras}}{\text{Record rate}}$$

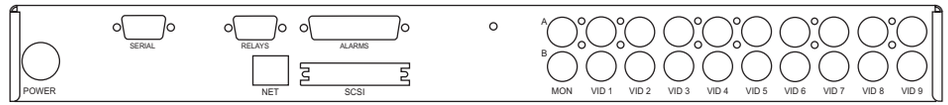
Calculating recording time

Eco9 calculates the recording time automatically when the record rate and image quality are entered. Alternatively, an interactive record calculator is available for download from our web site:

www.dedicatedmicros.com

Quick Install

Eco9 can be installed in as little as 4 steps, and being plug-and-play, cameras will be detected and recorded automatically.



Connections at rear of the D4

Video

VID1 to VID9 - 75Ohm BNC composite camera connections (1V pk-pk)

MON A - Main monitor, 75Ohm BNC composite monitor connection (1V pk-pk)

MON B - Spot monitor, 75Ohm BNC composite monitor connection (1V pk-pk)

Data

SCSI - 50-pin HD SCSI-2 connection

NET - RJ-45 10-baseT Ethernet connection

SERIAL 1 - 9-way (Male) D-type RS-232 serial port (PPP modem)

Alarms and relays

ALARMS - 25-Way (Female) D-Type, programmable direct alarms; NO/NC

RELAYS - 9-Way (Female) D-Type

STEP 1. Connect cameras

Connect cameras to the video inputs marked VID1 to VID9. Use the bottom row of connectors for looping through to other equipment.

STEP 2. Connect monitors

Connect the video output marked MON A to the Main monitor (digital playback and multiscreens).

Connect the video output marked MON B to the optional Spot monitor (analogue full-screen images).

STEP 3. Connect the external devices

If external devices need to be connected to Eco9, go to the next section - 'Connecting external devices', before proceeding to Step 4.

STEP 4. Connect power

Once the Eco9 is in its **final position** and all external devices have been fitted and powered, connect the PSU to the rear of the unit and apply the power. The power-up procedure may take up to one minute before Eco9 can be used.

will now record all cameras without any further programming!

Connecting External Devices

Devices that can be connected to Eco9 include:

Storage devices

Alarm and relays

Ethernet networks

Dial-up modems

If you do not require any of the above devices to be connected to Eco9, move on to 'Configuring Eco9' - Page 8.

Connecting storage devices

Images are recorded to the internal hard disk for instant playback and searching by the operator. The capacity of the internal disk affects the amount of images and time that can be recorded. For example, an Eco9 with a 80GB hard disk can record for 8 days, while a 300GB hard disk allows one month of recording.

The internal hard disk is a temporary storage device as the images are constantly being overwritten after a certain period of time. If images need to be kept for longer then external storage is required. The 50-way high density SCSI-2 port on the rear of the Eco9 is used to connect to external storage such as CD writers.

Images can be copied from the internal hard disk onto CDR disks for long term storage. CD's are ideal for recording relatively small amounts of images such as events, video clips, or incidents. These images can be played back on any PC with a CD drive and DM Playback software installed.

Compatible CD writers include:

Yamaha CRW2200SX
Yamaha CRW3200SX
Yamaha CRW-F1SX
Plextor Plexwriter PX-W1210TSE
Plextor Plexwriter PX-W4012TSE (recommended).

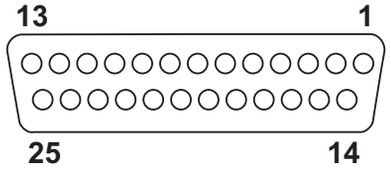
The table below shows the recording times at typical recording rates (at Medium image quality, 18KB):

	1PPS	2PPS	3PPS	6PPS	12PPS	25PPS
CDR-640MB	**9h 46m**	**4h 49m**	**3h 12m**	**1h 36m**	**48m**	**23m**

Connecting Alarms and Relays

Dry contact alarms can be wired directly to the alarm connection on the back on the Eco9. There are 10 alarm inputs, one for each camera, and a global alarm input.

The alarm connections are as follows (view from solder side):



PIN	CONNECTION
1 - 9	1 - 9
10	Global alarm input (default) or Schedule
11 -20	Reserved
21 - 25	Ground

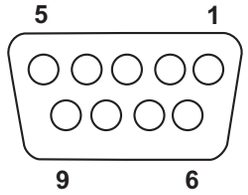
The polarity of the alarms - normally open or normally closed, can be set in the ‘Camera Setup’ menu.

The global alarm input is used to set or unset the schedule function.

An alarm trigger performs the following actions:

Set	Unset
Close relay 1	Open relay after 2 seconds
Display the alarm camera on the main monitor	Resume pre-alarm display after 2 seconds
Interleave record the alarm camera	Standard record after 2 seconds

Relay connections are as follows:



PIN	CONNECTION	ACTION
1 & 6	Relay 1	Close on Alarm
2 & 7	Relay 2	Close on Activity Detection
3 & 8	Relay 3	Close on Camera Fail
4 & 9	Relay 4	Reserved

Important Note: The onboard relays are rated at 24V 500mA, do not attempt to connect mains power through the relays

Connecting to an Ethernet network

Eco9 can be connected to a standard 10-baseT Ethernet network allowing full control of the Eco9 from a remote location.

Network connection

To connect an Eco9 to a network you will need the following items:

- A spare 10-baseT network point.
- A RJ-45 network cable (CAT5 or equivalent).
- A static IP address and Subnet mask (some networks may also require a Default gateway, consult the network administrator for advice).

To configure the Eco9 on the network you will need to perform the following steps:

1. Enter the Eco9 menu (press and hold the **mode/menu** button).
2. Tap the **mode/menu** button until the 'System Options' page is displayed.
3. Use the cursors to select 'Network settings'
4. Enter the 'Network settings' menu by highlighting 'Edit' and pressing the up or down cursor.
5. Enter the IP address, Subnet mask and Default gateway in the spaces. **Note:** The addresses are four sets of three digits, if you have only two digits in the address insert a 0 before the number i.e. 123.123.123.001
6. Press the **mode/menu** button to exit the menu.
7. Press camera 1 to accept the changes and reboot the system, or press **mode/menu** again to exit without changing the settings.

Viewing images across the network

Eco9 can use either a web browser or Network Viewing Software to view images across the network. The Network Viewing Software can be downloaded from the unit onto your local PC using the network connection.

To download the network viewing software:

1. Open your web browser software on your PC.
2. Enter the IP address of the Eco9 in the 'Address' box in Internet Explorer or Netscape and press Enter. Remove all preceding 0's, i.e. 123.123.123.001 in the Eco9 should be entered as 123.123.123.1 in the web browser.
3. A web page from the Eco9 is loaded. Click on the 'PC viewer application' icon, you will be prompted to Save or Run the program.
4. Select 'Run this application from its current location'.
5. The software will download and install, follow onscreen prompts.
6. The program can be found in Start>Programs>DM Network Viewer.

Details of using the Network Viewing Software can be found in the 'User Guide' in the Network Viewing Software folder.

The minimum specification PC for viewing images over a network is:

- 500Mhz CPU
- 64MB RAM
- 4MB video card (capable of 16 million colours)
- Minimum of 800x600 screen resolution

Configuring eco9

Viewing images across the network using a web browser

It is possible to use Microsoft Internet Explorer (version 5.X and above) and Netscape Navigator (version 4.7X) to view images from an Eco9. Follow the instructions above to display the Eco9 web page, but click on the 'Web viewer' icon instead of the 'PC viewer application' icon. It will be necessary to enter a username and password at this point, the default "username" and "password" is **user** and **password**.

Note: The web viewer does not have all the features of the Network Viewing Software, but it is useful if it is not possible to download the software, or if you want to view the images from an offsite location i.e. via the web.

Viewing images across the network using an Apple Mac or Linux

There is limited support for viewing images using an Apple Mac or Linux based operating system using Netscape Navigator 4.7X web browser.

Connecting dial-up devices

Eco9 supports a PPP (Point to Point Protocol) connection from the RS-232 serial port. This port allows an external US Robotics (56K) modem to be connected to the serial port of the Eco9.

To make a dial-up connection in Windows®, Click on *Start* > *Help*, and type in 'Dial Up' in the search window. A description of making a dial-up connection to another PC should be displayed.

Note: If a dial-up connection is used, the default PPP address is 172.17.2.2, and username and password is 'user' and 'password' for dial-up and logon.

USING THE MENU

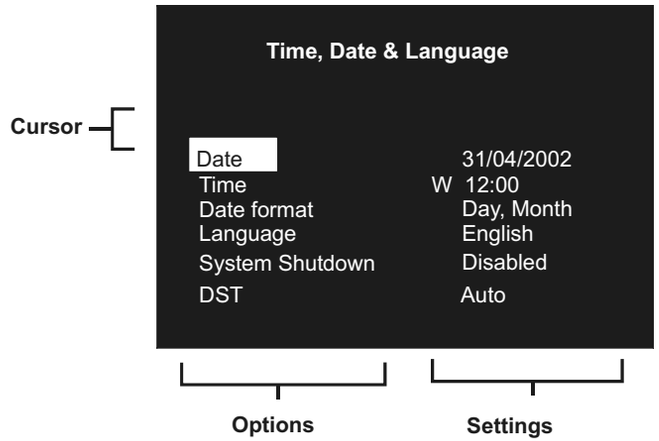
Eco9 uses a paged menu system to guide the installer through the installation process.

Entering the menu

To enter the menu:
Press and hold the **mode/menu** key(if you tap the menu/mode key you will switch between the Spot and Main monitor, menus are not available in Spot mode).

Navigating the menu

The menus are displayed with 'options' on the left-hand column and 'settings' in the right hand column. A cursor (highlighted text) can be moved using the ⇦⇧⇩⇨ cursor keys on the front panel.



To view the next page

Tap the **mode/menu** key to view the next page.

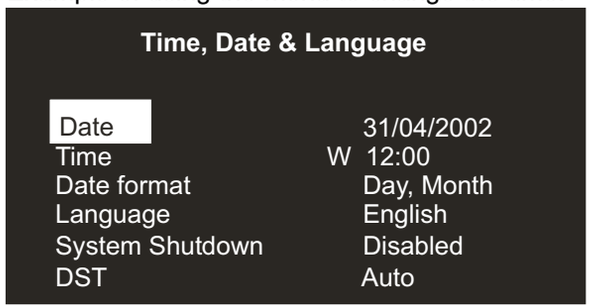
Tip: Tapping the ◀◀ or ▶▶ keys will allow you to go back or forward a page in the menus.

To exit the menu

Press and hold the **mode/menu** key to exit the menus.

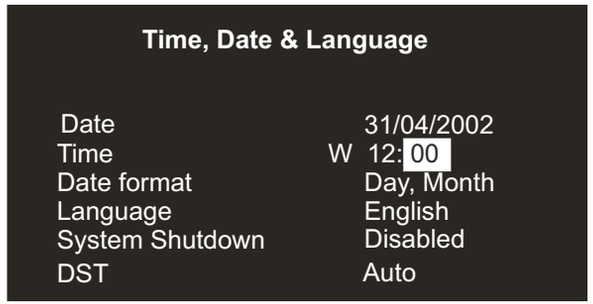
Tip: Cycling though all the menus by tapping the **mode/menu** key will also exit the menus.

Example of using the menu to change the time:



1. Press and hold the **mode/menu** key to enter the installer menu. The 'Time, Date & Language' page is displayed.

2. Use the ⇩ cursor to select the 'Time' option on the left-hand side of the menu.



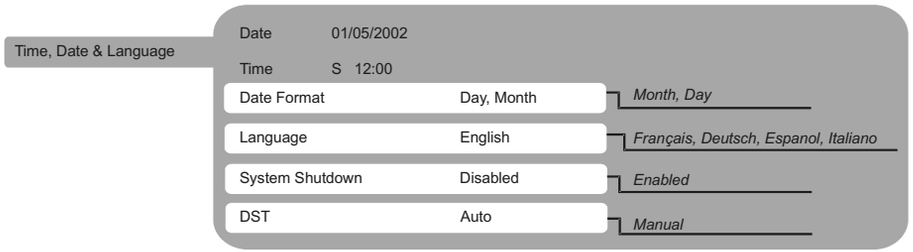
3. Use the ⇨ cursor to highlight the minute settings.

4. Use the ⇧⇩ cursors to change the settings, in this example 12:30.

5. Use the ⇦ cursor to return to the left-hand side of the page and select another option. Or, press and hold **mode/menu** to exit the menu.

10

Time, Date & Language



Date

As default, the date is entered DD:MM:YYYY on PAL models and MM:DD:YYYY on NTSC models, this can be changed using the Date format option below.

Time

The time should be entered in 24 hour format (HH:MM).

Note: Summer and Winter time is signalled by an ‘S’ or ‘W’ next to the time.

Date format

The date format can be changed from Day, Month to Month, Day depending on regional preference.

Language

The menus can be displayed in a number of languages. Upon selection these are presented as a dropdown list.

Available languages are: English, French, German, Spanish, Italian, Chinese, Russian, Czech, Polish, Dutch, Hungarian, Swedish and Croatian.

System Shutdown

If the Eco9 needs to be switched off for any reason, the shutdown procedure needs to be followed:

1. **Select ‘Enabled’ in the System Shutdown option.**
2. **When the pop-up menu appears, press and hold camera 1 for five seconds to shutdown.**
3. **The message ‘It is now safe to switch off your unit’ is displayed, switch the Eco9 off at the wall.**

WARNING: Data loss or disk failure may occur if a system shutdown is not performed before removing power.

DST

Daylight saving time can be adjusted automatically or manually. By default, the automatic setting will go forward one hour on the last Sunday in March at 01:00, and one hour back last Sunday in October at 02:00. The default automatic settings can be changed.

Important: If the country or region where the unit is located does not use DST then select manual.

Camera Viewing

An option is available to view all cameras or selected cameras. All the cameras are viewed by default. Cameras removed from viewing do not affect the cameras
being recorded.

To change the cameras to be viewed

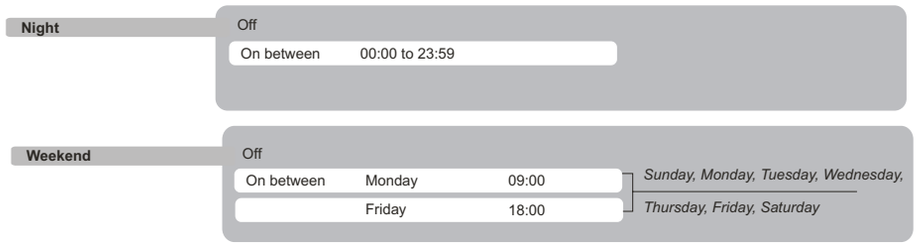
- Press the '⇧' cursor key to change the edit field to 'Selected cameras'.
- A menu will display the cameras to be viewed.
- Press the camera key to toggle the camera in or out of the viewed sequence. This camera will be displayed. A filled box denotes cameras that can be viewed.

Note: Cameras removed from view are not displayed on the main or spot monitor in live or playback mode, multiscreen displays will show a blank segment.

Tip: It is advisable to set a password to stop this setting being altered by unauthorised personnel.

Schedule

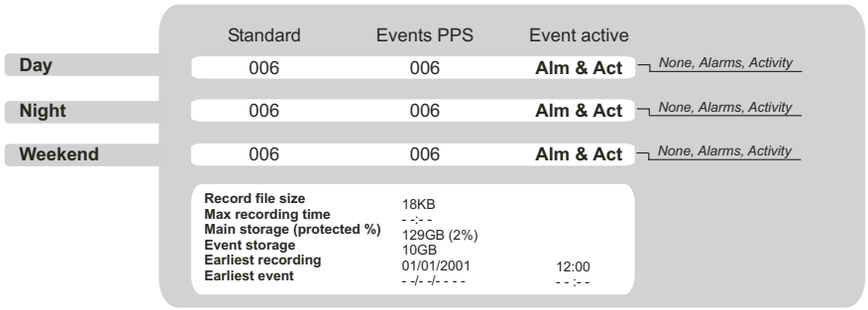
A schedule can be used to change the record rates and select whether alarms or activity is enabled.



The schedule gives the option to switch to night and weekend settings at pre-set times and days.

Note: The Weekend setting overrides any night settings during the defined weekend period.

Record Schedule



Note: The Night and Weekend options are only displayed if a corresponding Night and Weekend schedule has been configured in the Schedule menu page.

Standard and Event PPS

Select a record rate in pictures per second (PPS) to be recorded across all cameras. The maximum record rate is 25PPS for PAL and 30PPS for NTSC cameras when a single camera is recorded.

The default record rate is 6PPS, this is the equivalent to a VCR in 24-hour time-lapse mode.

To configure Eco9 to record only events, select the Standard PPS as 0PPS and the Event PPS to a value you want the events to record at for example, 3PPS. The Eco9 will then not record any cameras until activity or the global alarm are triggered, it will then record the activity camera interleaved with the other cameras (activity) or record all cameras on receipt of the alarm (global alarm).

The table below shows the equivalent record rates of typical VCR time-lapse modes:

VCR time-lapse mode (hours)	Eco9 record rate (PPS)
3(2)	25(30)
12	12
24	6
48	3
72	2
168	1

Figures in brackets are for NTSC systems.

Tip: To work out the update rate per camera - the number of seconds before the camera is updated. Divide the number of cameras by the record rate (PPS). For example, 9 cameras with a record rate of 6PPS will be:

$$\textbf{Update rate (seconds)} = \frac{\textbf{Number of cameras}}{\textbf{PPS}} = \frac{9}{6} = \textbf{1.5 seconds}$$

You can decrease the update rate by increasing the record rate (PPS), the only drawback is that the recording time will also decrease.

Events active

Select whether activity is on or off for day, night, and weekend schedules.

When activity is triggered it is automatically interleaved with the non-event cameras, i.e. if camera 1 has an event, the recording sequence would be **1**21**3**1**4**1**2**1**3**1**4** rather than the standard sequence of 12341234, effectively increasing the record speed of camera 1.

Tip: By using event interleave, it is possible to keep the record rate constant but effectively increase the speed of activity recording.

Recorded file size

The file or image size affects the quality of the images recorded to disk. A larger file size has superior picture quality, but will fill the hard disk faster, so less time will be recorded before the images will be overwritten.

The file size can be set between 6 and 45KB. The table below shows the image quality at typical file sizes:

Image quality	File Size (KB)
LOW	14KB
MED	18KB
HIGH	25KB

Note: The equivalent image quality is representative in most circumstances, however, camera views with large amounts of image detail may require the file size to be increased to obtain a similar image quality.

Maximum recording time

The maximum recording time is the number of days and hours before the images are overwritten. The maximum record time is calculated automatically when the standard or event record rate is highlighted and changed.

Tip: Reducing the file size (KB) or record rate (PPS) can increase the maximum recording time.

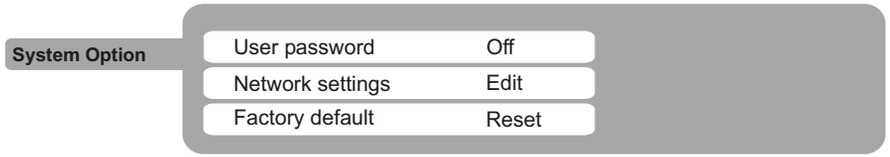
Main storage (protected%)

The total video storage in Gigabytes (GB) is displayed along with the percentage of video storage which is protected (will not be overwritten). Note that the calculations for recording time assume there is no protected video. Video that is protected will need to be manually unprotected in the ‘Record Options’ before it can be used for recording again.

Earliest recording

The earliest recording displays the date and time of the first image on the disk.

System Options



User password

A password can be set to prohibit unauthorised access to the menu systems. The default setting is Off.

To set or change the menu password:

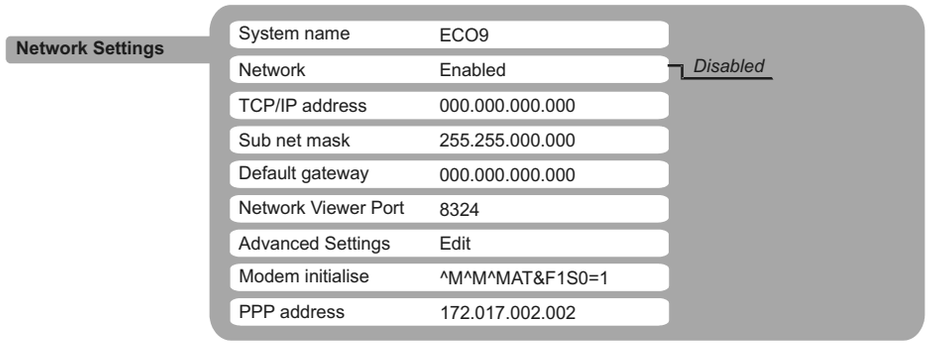
1. Use the cursor keys to change the User password to On.
2. When the new password menu is displayed use the camera key numbers to enter a password - up to eight numbers.
3. Press the **mode/menu** key to enter the password.
4. When prompted re-enter the password to confirm and press the **mode/menu** key when complete.

WARNING: For security reasons, loss of passwords will require the unit to be returned for the passwords to be reset.

Make a note of your password here __ __ __ __ __ __ __ __

Network settings

This option is used to configure the unit for connection to an Ethernet network or dial-up. A pop-up box for configuring the network settings is displayed with the following items:



System name

Each Eco9 on the network can be given a system name to help identification, the unit name is displayed in the Network Viewing software. A maximum of 30 characters can be used for the system name. The default unit name is ‘Eco9’.

Tip: If you do not want the unit to automatically identify itself on a network, use a ‘#’ symbol as the first character. You will still able to access the unit across the network by typing in the IP address directly into the Network Viewing software.

Network

This option is used to enable or disable the network option. The network is enabled by default.

TCP/IP address, Subnet mask, Default gateway

A unique IP address and a subnet mask must be given to the Eco9 in order to communicate with it over a network. On an existing network these are often obtained from the network administrator. A Default gateway will be required if the Eco9 is going to be viewed from a remote location, such as a WAN or dial-up via a router.

Note: The Eco9 requires a Static IP address, even if it is connected to a dynamic (DHCP) network.

Network Viewer Port

By default, the port number of the digital recorder is 8234 for Network Viewing Software. Ordinarily, it is not necessary to change the port number of the machine unless there is either:

1. More than one unit on the LAN and you are using a broadband connection with a single public IP address

2. A specific policy for controlling the port numbers on the network is in place.

If either of these are the case, then the port number can be changed using the Network viewer port option.

Warning: Ensure the port number allocated within this option is unique for the network and does not conflict with any other device on the network. If port numbers conflict on a network it is likely that one or both of the units with that port allocation will not operate. Get advice from the Network Administrator before changing the port number.

Valid port numbers are between 0 and 1023 (Well known ports), 1024 and 49151 (Registered ports), and 49152 through 65535 (Dynamic and Private ports).

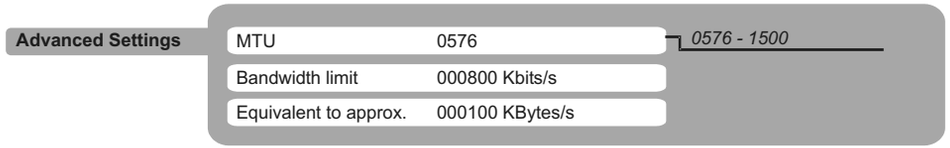
When changing the Network viewer port number, the Remote Admin port number will automatically be changed to 'Network viewer port number plus one'. Therefore, if several machines are used on the same network, it may be necessary to increment each machine's port number by 2 to allow full operation. For example, port 6000 for unit 1, port 6002 for unit 2 etc.

Note: There is no indication as to the new port number on the digital recorder itself, the port number is only revealed within this menu or when a unit is detected on a LAN using the Network Viewing software.

If you are using a broadband connection, you will need to use the 'Port Forwarding' or 'Virtual Server' function of the router to direct port traffic to the correct IP address.

Advanced Settings

The Advanced Settings option allows the configuration of MTU and bandwidth limitation.



MTU

The MTU (Maximum Transmission Unit) is the largest physical packet size, measured in bytes, that a network can transmit. Any messages larger than the MTU are divided into smaller packets before being sent.

Ideally, the MTU should be the same as the smallest MTU of all the networks between your machine and the final destination. If the MTU figure is too large packets will be broken up (fragmented), which slows down transmission speeds, and in some cases cause a ‘Connection to Unit Timed Out’ message when using DM Network Viewing Software.

MTU sizes can vary for each connection and it may be necessary to use trial and error to find the optimal MTU, if you are unsure about the MTU size, use the default setting (576) and work up if necessary. Typical MTU sizes are as follows:

Network Connection	MTU Size
PPP (PSTN Modems, ISDN/PSTN routers	576 (default)
Ethernet	1500
PPPoE (PPP over Ethernet, DSL, Cable)	1458
PPPoA (PPP over ATM, DSL)	1458
VPN	1350

Warning: Changing the MTU size can have an adverse affect on the transmission speed and operation over the network. Check with your network administrator or service provider for advice on the correct MTU size for the network.

Bandwidth limit

The bandwidth used by the Eco9 can be limited to prevent overloading on slower networks. The Eco9 has a 10MB/s connection (10Base-T).

The maximum bandwidth that an Eco9 will use (5 users viewing images) is 6Mb/s (006000Kbits/s) so any limiting over 60% does not affect the bandwidth used by the Eco9. The maximum bandwidth used by one user is approximately 2.5Mb/s

If you want to limit the bandwidth used by the Eco9 to 1Mb/s set the bandwidth limit to 001000Kbits/s, the equivalent KBytes/second will automatically be calculated.

Note: Restricting the bandwidth does not decrease the image quality, but the update rate of the images over the network will decrease.

Modem initialise

Note: Serial port 1 is always initialised for PPP connection using a US Robotics modem.

This text string will be transmitted from the Eco9 to the modem on a regular interval to ensure communication is still present. It is also the string that would be used for 'dial in' for the PPP function.

PPP address

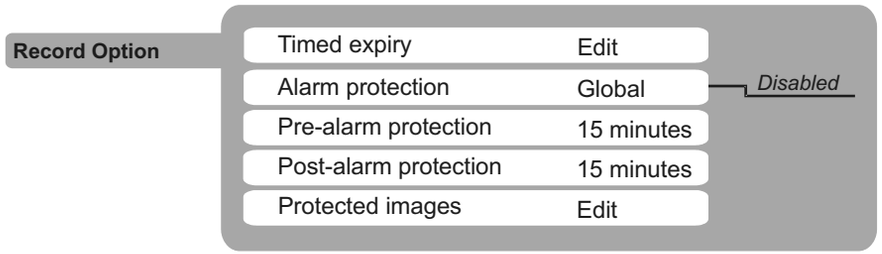
The PPP (Point to Point Protocol) address is used when a Hayes compatible modem is connected to the Eco9. The PPP address must be entered into the Network Viewing software or Web browser to view images when connected to the Eco9.

By default, the PPP address is 172.017.002.002 when the TCP/IP address is at its default setting of 000.000.000.000. The PPP address cannot be changed directly, but is changed automatically when the TCP/IP address is adjusted.

Factory default

Use this option to return all settings to the factory condition.

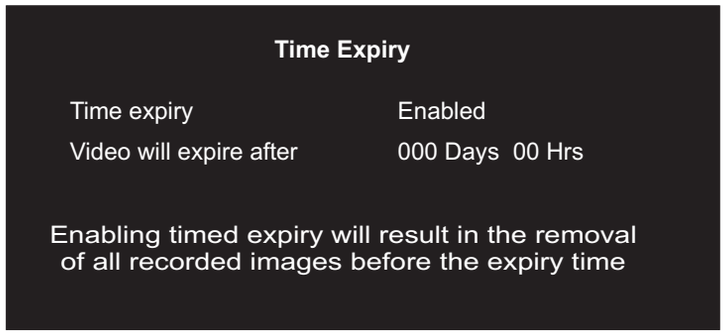
Record Options



Timed expiry

The timed expiry option allows images to be held on the disk for a selected number of days or hours. Images on the disk which are older than this time cannot be accessed. By default there is no timed expiry. This option can be used to prevent the unit recording over 30 days for example.

Enable the timed expiry option, and enter the days and hours as required.



Alarm protection

Global alarm triggers can be protected automatically as they are received. If no alarms are to be protected, select Disabled.

Pre-alarm protection

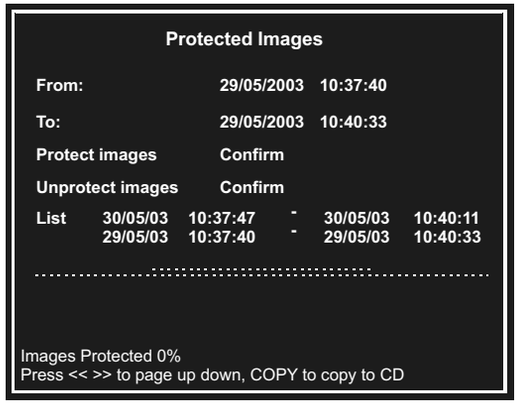
This is the amount of time the images are protected before the Global alarm is triggered. By default this setting is 15 minutes, but this is adjustable from 00 minutes (no pre-alarm protection) to 60 minutes.

Post-alarm protection

This is the amount of time the images are protected after the Global alarm has ended. By default this setting is 15 minutes, but this is adjustable from 00 minutes (no post-alarm protection) to 60 minutes.

Protected images

Selecting this option allows images to be protected or unprotect manually



To protect images:

1. Enter the time of the first image to be protected (in the From area).
2. Enter the time of the last image to be protected (in the To area).
3. Select ‘Confirm’ in the Protect images option.
4. The selected images are protected and placed in the list.

To un-protect images:

1. Enter the time of the first image to be protected (in the From area), or highlight an image in the list and press Camera 1.
2. Enter the time of the last image to be protected (in the To area), or highlight an image in the list and press Camera 2.
3. Select ‘Confirm’ in the Unprotect images option.
4. The selected images are unprotected and removed from the list.

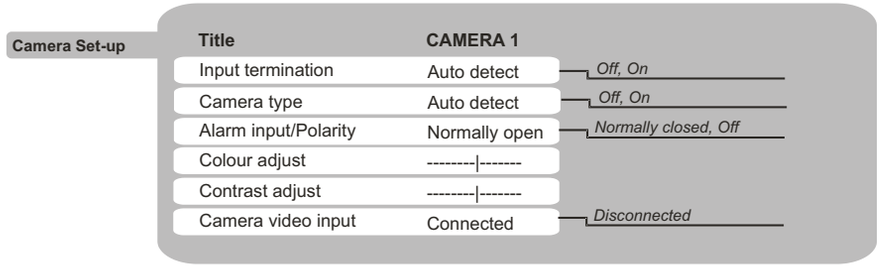
Note: If you try to unprotect a sequence of images before they are all protected, for example if you are protecting a large number of images, some of the images may be left in the list. It may be necessary to wait a few minutes for the remaining images to be protected before un-protecting them.

Important information regarding Protected Images.

There is a percentage indication of the amount of images that are currently protected on the hard disk. It is important to remember that the protected images will remain on the hard disk and will not be overwritten until they are manually removed.

Protected images reduce the amount of space you have for normal recording. For example, if 50% of the images are protected, this effectively means you only have half the disk available for normal recording, so recording settings that should normally give you 30 days would only allow 15 days of recording.

Camera Setup



Title

Each camera title can be up to 12 characters long.

Input termination

The input termination does not auto detect by default, the termination must be set manually On (default) or Off. The termination must be set to Off if the camera is looped through to other equipment.

Camera type

Colour and monochrome cameras are detected automatically, allowing colour/mono switching cameras to be connected. The camera type can be manually configured as Colour or Mono if necessary.

Alarm input/Polarity

Select whether the alarm connected is Normally open (default), Normally closed, or Off.

Colour adjust

When the colour bar is selected, press ⇩ to reduce, and ⇧ to increase the colour.

Note: this option is not displayed if the camera is set as monochrome.

Contrast adjust

When the contrast bar is selected, press down to reduce, and up to increase the contrast.

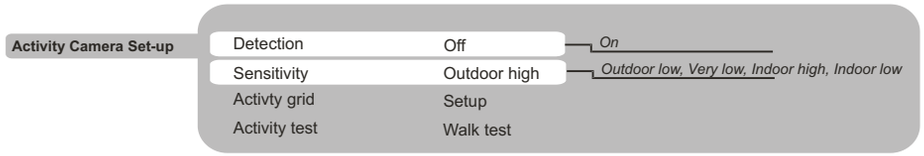
Camera video input

This option is only displayed when a camera has failed or is offline. Select disconnect whilst the camera is offline to prevent the camera fail message and alarm being triggered.

Tip: This menu can be entered directly by pressing and holding a camera key.

Activity Camera Setup

Activity detection is used to record more images to disk from cameras that have activity. The sensitivity of activity can be adjusted and areas can be masked off according to the scene type.



Detection

Select whether activity detection is on or off for the selected camera.

Sensitivity

There are 5 levels of sensitivity for activity detection to ensure any scene environment can be covered.

Note: When setting the sensitivity it is recommended that the Activity test option be utilised to ensure the correct sensitivity is selected.

Select the sensitivity level which matches the camera's placing:

- Cameras sited outdoors where there may be a lot of background movement, such as trees or rain, should be set to Outdoor high, Outdoor low sensitivity or very low sensitivity.
- Cameras sited indoors where there is very little background movement should be set to Indoor high or Indoor low.

The sensitivity levels:

- Indoor High (most sensitive setting)
- Indoor Low
- Outdoor High
- Outdoor Low
- Very Low (lowest sensitivity level)

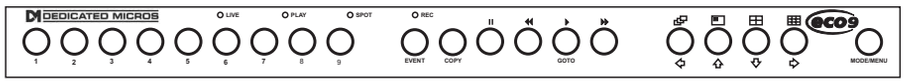
Activity grid

An 8 x 16 grid is used to mask areas where activity detection is enabled. When the grid is displayed, use the cursor keys to move the cursor to the desired location and press a camera key to toggle the block on (white dot) or off.

Activity test

Use this option to test and tune the sensitivity and activity grid set up for each camera. When activity is detected on the camera a white dot is displayed. Press the **mode/menu** key to exit the test.

Using eco9



Playing back images from the disk

Playback

- To playback images tap ◂◂ to rewind to the desired location and then press ▸ . Press play for review mode or press and hold play for the GOTO option.
- When in playback, tap ◂◂ or ▸▸ to search rewind or fast forward, multiple taps will increase the search speed.
- Tap ❚❚ to pause the current image. Tapping ◂◂ or ▸▸ whilst paused will frame advance or rewind.

Goto time

Press and hold ▸ (GOTO) to play back from a specific time or date.
Enter the required time and date, and press ▸ .
Tip: The images are updated in the background automatically when the time and date is adjusted.

Exit playback

Tap the **mode/menu** key to exit playback mode, the Play LED will go out.

Using the Event log

Alarms and activity detection are tagged and stored in the event log for easy retrieval. Each event is labelled with event type (alarm or activity), its camera title, time, and date.
To view an event from the event log:

- In Live mode with control of the Main Monitor tap the **event** key to display the event log.
- Use ⇧ and ⇩ to select the event required, the selected event is displayed in the preview window.
- Tap ▸ to view the event in full screen.
- Tap mode to exit the Event log.

Event Search Filter

It is possible to filter the search by selecting a particular function (alarm, activity or system) within the time and date and on a specific camera. To enter this option, with the Event Log displayed press the **event** key again. This will display the Event Search Filter menu.
Tip: You can enter this menu by pressing and holding the **event** key.

Viewing single cameras

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Full

Pressing a camera key will display a full screen image of that camera.

Zooming an image

Press the same camera key to toggle zoom on and off.
When zoom is enabled, use ⇦⇧⇩⇨ to scroll around the image
Note: Zoom is not available in playback mode.

Freezing an image

Double tap the camera key toggle freeze frame on or off.

Viewing multiple cameras

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Picture in Picture

Press the PIP key to toggle the main and PIP image.
Press and hold the PIP key to edit the display, use ⇦⇧⇩⇨ to select the segment, press the required camera key to fill that segment.
Press **mode/menu** to exit.

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Quad

Press the QUAD key to switch to quad display.
Press and hold the QUAD key to edit the display, use ⇦⇧⇩⇨
to select the segment, press the required camera key to fill that segment.
Press **mode/menu** to exit.

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Multi-screen

Press the multi-screen key to toggle between a 9-way or an 8+2 display.
Press and hold the Multiscreen key to edit the display, use ⇦⇧⇩⇨
to select the segment, press the required camera key to fill that segment.
Press **mode/menu** to exit.

Sequencing cameras

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Sequence

Press the sequence key to toggle the main monitor sequence on or off.
Press and hold the sequence key to edit the sequence.
Use the camera keys to include or remove cameras from the sequence.
Press **mode/menu** to exit.

Note: The spot monitor sequence can only be activated or edited in spot mode.

Viewing cameras on the Spot monitor

Press the mode key to toggle ‘spot’ mode, indicated on the main monitor and the front panel LED. Press a camera key to display that camera on the spot monitor or tap the sequence key to sequence the cameras.

Copying images to CD

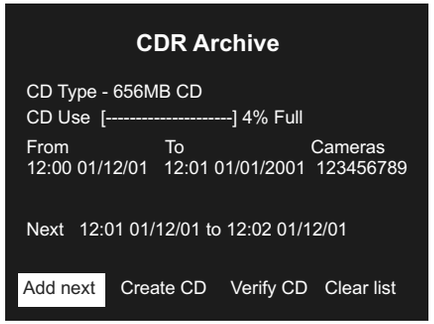
To copy images to the external CD writer (if connected):

1. Insert a blank CDR or pre-formatted CD-RW into the CD writer.
2. Press and hold the **COPY** key to display the following screen.
3. Use the cursor keys to change the time to copy ‘to and from’.

Copy destination This is the name and type of CD drive connected to the SCSI port.
Copy from time Select the time you wish to copy images from.
Copy to time Select the time you wish to copy images to.
Copy Select ‘All cameras’ or individual cameras to copy using the camera keys (filled boxes are selected cameras, unfilled boxes are not selected).

TIP: You can display this page directly by pressing and holding the COPY key and enter the copy time manually, rather than the first and last image.

Once the ‘Copy images’ page is complete, press the menu key to display the following menu:



This menu displays the archive list of images to be copied to the CD, the ‘CD Use’ bar indicates the how much space is available on the CD, once it reaches 100% no more images can be added to the archive.

Add next Add the selected times to the archive list.
Create CD Creates a CD with the images in the list.
Verify CD Verify that the CD has been written correctly.
Clear list Removes all entries from the list.

To select any of the above options, highlight the option and tap **mode/menu**. To add images to the CD:

1. Select ‘Add next’ and press the **mode/menu** key to add the displayed time to the list.
2. You may wish to add more images to the CDR archive if the CD is not yet full. To select more images to add to the list press ◂◂ to return to the ‘Copy images’ screen.
3. Once all the required images are added to the archive list, select ‘Create CD’ and press the **mode/menu** key to create the CD.
4. “Disk burn OK. Press **mode/menu** to Continue” will be displayed. Verify CD or Clear list options are available at this stage.
5. Press and hold the **mode/menu** key to exit the CDR Archive option.