BAXALL

MDR Series Multiplexed Digital Recorders
User Manual

IMPORTANT

The first few pages of these instructions contain important information on safety and product conformity. Please read, and ensure that you understand this information before continuing.

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CONTENTS

IMPORTANT SAFEGUARDS

This product is exclusively for use in CCTV applications and has no other purpose.

Read and Retain these Instructions - All the safety and operating instructions must be read before the unit is operated and should be retained for future reference.

Cleaning - Unplug the unit from the supply outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid or aerosol cleaners.

Accessories - Do not use accessories that have not been recommended by the product manufacturer as they may cause hazards.

Water and Moisture - Do not install this unit near sources of water. For example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area that is classified as a wet location. Do not expose the unit to rain or moisture. Moisture can damage internal components.

Mounting During Installation - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory kit supplied by the manufacturer.

Chassis: Other equipment may be placed on top of the unit if it weighs less than 35 pounds (16 kilograms).

Temperature: Observe the unit's operating temperature (0 to 40^{O}C) and non-condensing humidity specifications (10% to 80%) when choosing a location for the unit. Extremes of heat or cold beyond the specified operating temperature limits may cause the unit to fail. Do not install this unit on top of other hot equipment.

Ventilation - Install the unit in a well-ventilated area. Openings in the enclosure are provided for ventilation to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered, and therefore this unit should not be placed in a built-in installation unless proper ventilation is provided. Do not place directly on other hot equipment, because this may increase its operating temperature.

Power - Ensure that the site's AC power is stable and within the rated voltage of the 12V DC power supply. If the site's AC power is likely to have spikes or power dips, use power line conditioning or an Uninterruptable Power Supply (UPS).

Power-Cord Protection - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, and the point where they exit from the appliance.

Cable Runs - cabling of the unit must be in accordance with the country of installation's national wiring regulations.

Object and Liquid Entry - This equipment must be protected from the ingress of foreign materials. Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

Servicing - There are no user-serviceable parts. Do not remove the covers as this may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.

Replacement Parts - When replacement parts are required, an approved service agent must be used in order to ensure any replacement parts used meet the specifications of the manufacturer. The use of unauthorised substitute components may result in fire, electric shock or other hazards.

Safety Check - Upon completion of any service or repairs to this unit, suitably qualified personnel must perform all relevant safety checks to determine that the unit is in a proper and safe operating condition e.g. flash testing, PAT testing, etc.

Signal Cables Connected to 0V (signal ground) - Ensure connections to signal cable '0V' are made in accordance with the country of installation's national wiring regulations to ensure safe operation and to minimise earth loops. This must not be confused with the safety earth connection required for Class 1 equipment, i.e., equipment that must be connected to a safety earth for safe operation.

Non-Use for Long Periods - If the unit is not to be used for long periods, it is recommended that input power, and all interface cables are disconnected from the unit.

DAMAGE REQUIRING SERVICE

Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the unit.
- If the unit has been exposed to rain or water.
- If the unit does not operate normally by following the operating instructions.
- If the unit has been dropped or the cabinet has been damaged.
- When the unit exhibits a distinct change in performance.
- If the unit has no power even when the power supply appears to operate correctly. If this is the case then ask a service engineer to test the internal fuse.

PRODUCT SAFETY

⚠WARNING

- **Installation is only to be carried out by competent, qualified and experienced personnel in accordance with the country of installation's National Wiring Regulations.**
- **The unit contains no user-serviceable parts.**
- **This unit contains a lithium battery whose expected life is in excess of five years. If the unit loses its settings each time it is switched off then the battery needs replacing. In this instance return the unit to the manufacturer or manufacturer's approved service agent who will replace the battery.**
- **There is a danger of explosion if the lithium battery is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Dispose of unused batteries according to the manufacturer's instructions.**
- **The unit must not be used in a medical and/or intrinsically safe application and is intended for general purpose CCTV applications only.**
- **Do not exceed the voltage and temperature limits given in the specification. Only operate the unit in a clean, dry, dust-free environment, pollution degree 2, overvoltage 2. Altitude not to exceed 2000m above sea level.**

ELECTROMAGNETIC COMPATIBILITY (EMC)

△CAUTION

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.

Radio Frequency Emissions
British standard BSEN50081-2:1994 Electromagnetic compatibility - Generic emission standard. Part 2. Industrial environment.

British standard BSEN55022:1998 Limits and methods of measurement of radio disturbance characteristics of information technology equipment.

Immunity
British Standard BSEN 50130-4:1996 Alarm Systems Part 4 Electromagnetic compatibility.

Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.

REGULATORY NOTICES

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 his own expense.

Modifications not expressly approved by the manufacturer could void the user's authority to operated the equipment under FCC rules.

MANUFACTURER'S DECLARATION OF CONFORMANCE

A "Declaration of Conformity" in accordance with the above EU standards has been made and is on file at Baxall Limited, Stockport, SK6 2SU, England.

The manufacturer declares that the product supplied with this document is complaint with the provisions of the EMC Directive 89/336 EEC, the Low Voltage Directive LVD 73/23 EEC, the CE Marking Directive 93/68 EEC and all associated amendments.

UNPACKING

Check the package and contents for visible damage. If any components are missing or damaged, contact the supplier immediately. Do not attempt to use the unit. If, for any reason they must be returned, the contents must be shipped in the original packaging.

- The MDR unit
- Alarm Interface Circuit Board
- Audio Cable
- Power Supply
- This User Manual
- WaveReader Software and Manual
- Quick Reference Guide
- Power Cords (120V AC and 220V AC)

FEATURES, CONNECTIONS AND SETUP

PRODUCT DESCRIPTION AND FEATURES

An MDR Series Multiplexed Digital Recorder is a video multiplexer capable of recording from multiple cameras to an internal hard drive while simultaneously providing playback. Unlike outdated timelapse VCRs, the MDR records high-resolution pictures. Digital recording improves playback quality over VCRs, and eliminates the hassle of cleaning heads, changing tapes or servicing motors. The unit can also be programmed to record continuously by overwriting the oldest recorded data. Depending on the setup, the MDR can store from a few hours to more than three years of colour images.

Programmable search features eliminate time consuming fast-forwarding or rewinding of tapes, searching for critical data. Searches for recorded images or events can be filtered by alarm, time, date, motion, video loss, camera number and ASCII cash register or ATM text.

Features of the MDR include:

- Multiplexer functionality with built-in digital recording
- Triplex simultaneous recording, playback, and live multiscreen viewing
- Remote programming and control through the RS232, RS485 and Ethernet ports
- View live or recorded images remotely using WaveReader software
- Dual multiscreen monitor displays
- Auto-detect video mode on startup (PAL or NTSC)
- Video motion detection (intrusion and activity)
- Motion search
- Preview search results with thumbnail images
- Record speed selectable per camera
- Displays include full screen, sequenced, picture-in-picture, and multiscreens
- Alarm Handling with history log. Pre and post alarm recording, selectable per camera
- Archive onto Baxall MDAe Disk Array, RAID, DAT, AIT, or CD-Rs
- IEEE 1394 Firewire interface for Baxall MDAe Disk Array or Firewire Disk Drives
- Continuous recording with simultaneous archiving
- PTZ control via ethernet or POTS, using compatible keyboards
- Covert camera recording (recording without display)
- Auto-daylight savings time change function
- Clock synchronization with network server
- Alarm notification via email and/or TCP/IP
- Integrated WaveBrowser software
- Dynamic IP addressing (DHCP)
- One-touch image printing directly from the MDR

△CAUTION

This products primary purpose is to furnish video multiplexing and recording. Although the unit has alarm handling and motion detection functions, they are considered secondary features. **This unit should not be the only alarm device on site.**

Products covered by this handbook

- MDR+CT16M4/0GB
- MDR+CT16M4/320GB
- MDR+CT16M4/640GB
- MDR+CT16M4/1TB

ASSOCIATED EQUIPMENT

Associated equipment in a typical security system could contain the following items:

- Five monitors
- A compatible keyboard
- Video cameras: composite video, 1 volt peak-to-peak
- Alarm input devices: pressure sensors, motion detectors, etc
- Alarm output devices: buzzers, sirens, flashing lights, etc
- A PC connected via Ethernet cable
- An external archive device, such as a MDAe, RAID, CD-R, DAT, or AIT drive
- Printer with printer server connected via Ethernet cable

For instructions regarding the connection of the associated equipment, consult the instruction manual of the associated equipment.

PASSWORDS

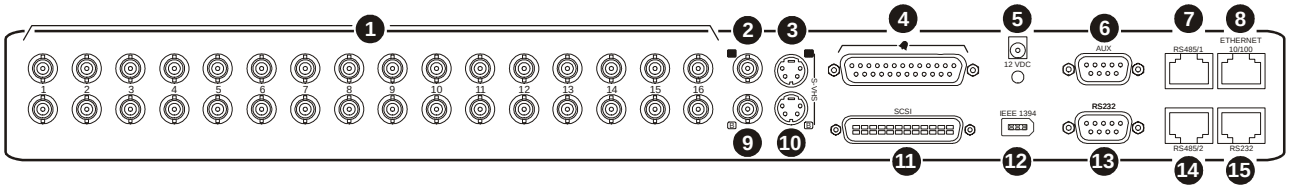
Passwords are provided to limit access to menus and certain features. Two levels of password security are provided:

- **Operator**: Limited menu access, only **Operator** and **SystemView** menus are available.
- **Installer**: Complete menu access.

It is recommended that the default passwords are changed after installation is complete. As a security measure, store the password in the administrator's secured files or in a limited access area.

Password Type	Access Level	Function	Changeable by user?	Default Password
Operator	Operator	Provides access to the Operator and System View menus	Yes	Press 'ENTER' 3 Times]
Installer	Installer	Provides access to all on-screen menus	Yes	3 4 7
Language	Installer	Provides access to the Onscreen Language menu	No	1 2 3
Factory Defaults	Installer	Resets the multiplexer to factory defaults	No	8 1 1
Ethernet Access	Installer	Deactivates the ethernet password, so that the unit may be accessed by any PC equipped with WaveReader	No	1 1 1

REAR PANEL CONNECTIONS



1 Camera Inputs

There are two BNC connectors for each camera. Either connector can receive a camera signal. The signal is looped (directly connected to the other connector), making the camera signal available to other equipment. All connections should be made using 75-ohm coxial cable with BNC connectors.

The camera input connectors are auto-terminating. This means that the input signal will automatically be terminated with 75-ohms unless a second cable is connected to the second BNC connector of the same camera input. Make sure there is 75-ohm termination at the end of the video line if the signal is looped through the MDR.

Time base correction is performed during digital capture. As a result, cameras do not require synchronization.

See page 42 for information about disabling unused camera inputs in the menu system.

2, 9 Composite Monitor Outputs A and B

When connecting directly from the MDR to the monitor, select the 75-ohm impedance setting on the monitor.

If an additional device is connected to the monitor's looping output, set the termination of the additional device as 75-ohm, and set the termination of the monitor as Hi-Z (High impedance).

All connections should be made using 75-ohm coxial cable with BNC connectors.

3, 10 Y/C Monitor Outputs A and B

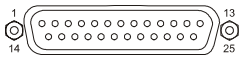
The Y/C video outputs have a 4-pin mini-DIN style connector. This style of connection is also referred to as SVHS and S-Video. All connections should be made using 75-ohm coxial cable.

❹ Alarm I/O Port

The back panel of the unit is equipped with an alarm I/O port (DB-25 style connector). **Do not attempt to wire directly to the DB-25 connector on the back panel.**

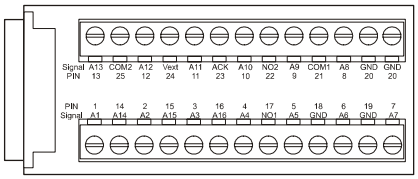
Connect the alarm PCB (supplied with the unit) to the alarm I/O port. Wire all alarm inputs to the alarm PCB as show below:

Pin	Function	Pin	Function
1	Alarm Input 1	14	Alarm Input 14
2	Alarm Input 2	15	Alarm Input 15
3	Alarm Input 3	16	Alarm Input 16
4	Alarm Input 4	17	Alarm Output Relay 1
5	Alarm Input 5	18	Ground
6	Alarm Input 6	19	Ground
7	Alarm Input 7	20	Ground
8	Alarm Input 8	21	Alarm Output Relay 1 Common
9	Alarm Input 9	22	Alarm Output Relay 2
10	Alarm Input 10	23	External Alarm Silence &
11	Alarm Input 11		Acknowledge Input
12	Alarm Input 12	24	VEXT Pulse Out
13	Alarm Input 13	25	Alarm Output Relay 2 Common



DB-25 Connector on Rear Panel

Alarm PCB



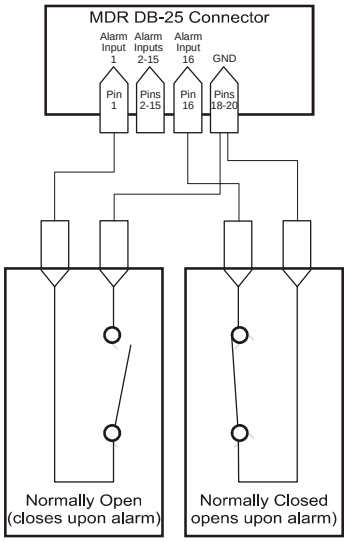
Alarm Inputs

An alarm condition can be activated by devices such as pressure pads, passive infrared detectors, door switches, or other similar devices.

Input: 1 per video channel, programmable in the menu system as normally-open or normally-closed.

High: +5V (+12V maximum)

Low: 0V



Once connected, alarm inputs can be configured as normally-open or normally-closed using the menu system. Alarms types should be configured in the menu as follows:

- Normally-Open, Zero Potential Relay Contact: Normally-Open
- Normally-Closed, Zero Potential Relay Contact: Normally-Closed
- TTL Active High: Normally-Closed
- TTL Active Low: Normally-Open
- Open Collector Active On: Normally-Open
- Open Collector Active Off: Normally-Closed

For more details on alarm configuration, see page 33.

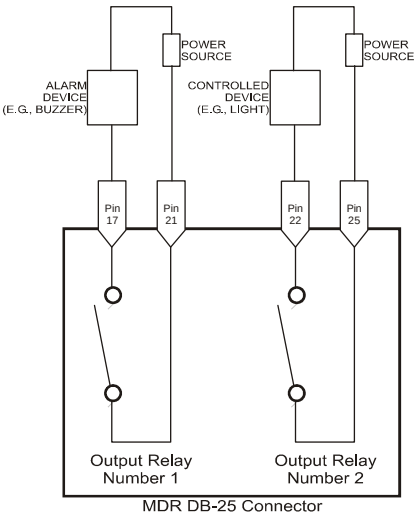
Alarm Relay Outputs

Alarm relay outputs can be activated when an alarm condition exists. The alarm output is only active for the duration of the alarm.

Output: Zero potential relay contacts programmable in the menu system as normally-open or normally-closed.

Voltage: 30V maximum

Current: 500mA maximum (short circuit protected)



Alarm relays can be programmed in the menu system to respond to macros and video loss. See page 36 for more details.

External Alarm Acknowledge Input

Connect to a switch or similar device to ground this pin in order to acknowledge an alarm condition, and silence associated buzzers and relays. Connect from pin 23 to either pin 18, 19, or 20 (ground pins).

The contact is a normally-open relay contact.

❺ Power Input

This 2.1mm barrel, centre positive connector is to be connected to the supplied power supply unit. The unit runs on a 12V DC, 60 Watt (5 Amp) power supply.

❻ Aux Port

DC-9 Connector on Rear Panel

The back panel of the unit is equipped with a aux port (DB-9 style connector). **Do not attempt to wire directly to the DB-9 connector on the back panel.**

Connect the supplied audio cable to the aux port. The cable provides five labelled connectors for the audio input and output, and BNC connectors for monitors C, D, and E:

- Audio Output: RCA connector
- Audio Input: RCA connector
- Composite Monitor C Output: Composite video output with BNC style connector
- Composite Monitor D Output: Composite video output with BNC style connector
- Composite Monitor E Output: Composite video output with BNC style connector

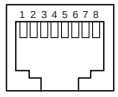
❼, ⓮ RS485 Ports

Two RS485 ports are provided for connecting to keyboards and other RS485 devices. Shields should be grounded at one end, preferably at the MDR.

See page 48 for information about configuring the RS485 network address settings in the menu system.

Wire Type	24 AWG, Twisted Pair with shield (2-wire)
Connector Type	RJ-45
Max Cable Length	3200 feet / 1000 metres

Pin	Use
1	Ground (Shield)
2	Not connected
3	Network +VE
4	Not connected
5	Not connected
6	Network -VE
7	Not connected
8	Not connected



RJ-45 Pin Configuration RS485 Ports

❽ 10/100 Ethernet Port

The Ethernet port is used to connect live or recorded images to a PC via the Ethernet.

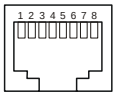
The cable connection configuration depends on the network configuration in use:

- For a MDR that connects directly to a hub, use a Straight Through connection.
- For a MDR that connects directly to a PC, use a Cross Over connection.

Consult with your Network Administrator for the specific type of configuration. See page 48 for information about configuring the ethernet settings in the menu system.

Wire Type	Cat 5
Connector Type	RJ-45
Max Cable Length	328 feet / 100 metres
Minimum Cable Length	6 feet / 1.8 metres
Hub Wiring Configuration	Straight Through
PC Wiring Configuration	Cross Over

Pin	Use
1	TX+
2	TX-
3	RX+
4	Not connected
5	Not connected
6	RX-
7	Not connected
8	Not connected



RJ-45 Pin Configuration for Ethernet Port

⓫ SCSI Port

The unit is equipped with a SCSI port for connecting external archive devices. The unit only supports a single SCSI device. The SCSI ID of the archive device must be set to 0 and the SCSI bus must be terminated, otherwise the system will not operate correctly.

Additional menu setup may be necessary to configure the archive device. See page 44 for more details.

Connector	50 Pin, High Density SCSI-2
Gender (on unit)	Female
Compatible devices	MDAe, RAID, DAT, AIT, CD-R, CD-RW
SCSI ID	0

⓬ IEEE 1394 Firewire Port

The unit is equipped with an IEEE 1394 Firewire port for connecting Firewire compatible external archive devices. For information on the approved devices, please refer to the Archiving Addendum at the back of this manual.

Connector	6 position DIP
Cable	6 position Firewire

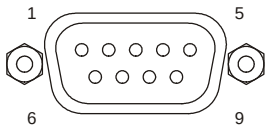
△CAUTION

Do not connect both SCSI and IEEE 1394 archiving devices to the MDR. Archiving support is only available for one type of interface at any one time.

⓭ DB-9 RS232 Port

A DB-9 RS232 port is provided for modem connection or remote control of unit. See page 47 for information about configuring the modem settings in the menu system.

Pin	Function
1	DCD
2	RX
3	TX
4	DTR
5	Ground
6	Not connected
7	RTS
8	CTS
9	Not connected

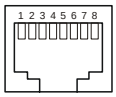


DB-9 Pin Configuration for RS232 Port

⓯ RJ-45 RS232 Port

A RJ-45 RS232 port is provided for Event Generation and ASCII Text insertion.

Pin	Use
1	Ground
2	Reserved
3	Not connected
4	RXD
5	TXD
6	Not connected
7	Ground
8	Reserved



RJ-45 Pin Configuration for RS232 Port

POWERING UP

It is important that power-up procedures are followed carefully. The unit uses an auto-detect feature to detect camera signals during power-up, and configures itself automatically.

Power-Up Procedure

Before applying input power to the unit, ensure that all the required connection cables are securely connected. Apply power to all monitors and cameras, and then apply power to the MDR unit.

Once power is applied to the unit, it will begin the power-up procedure. The unit will begin by displaying the software version on Monitor A and then the unit will begin recording automatically.

Check Video Input Quality

Check the picture quality by selecting each camera for full screen display. If the picture quality is poor, check the following items:

- The BNC connections
- The loop-through terminations
- The video levels of incoming signals
- The possibility of ground loops
- Consult the camera's installation instructions for additional information about proper camera setup.

Check Record And Playback Quality

Record for at least three minutes at the default record rate. Then playback the recording, selecting each camera for full screen display. Check the playback picture quality.

MINIMUM RECOMMENDED MENU SETUP

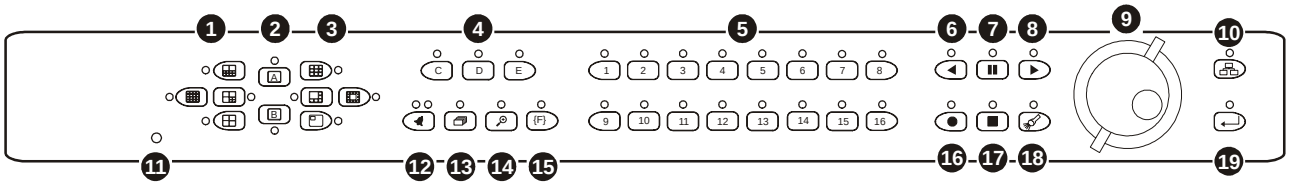
After installation is complete, it is strongly recommended that, as a minimum, the items in the **QuickInstall** menu are configured before the unit is used. All the features located in the **QuickInstall** menu are also found in the **Main** menu. These items are provided in the separate **QuickInstall** menu as a convenience for the installer.

For information about accessing and configuring the menu system, see page 23.

To find detailed information in this manual about configuring each item in the **QuickInstall** menu, use the following table to locate the **Main** menu location of each item in the **QuickInstall** menu.

QuickInstall Menu Item	Main Menu Location	Page In Manual
Change the Time	Main Menu → Time/Date → Set Time	25
Change the Date	Main Menu → Time/Date → Set Date	25
Edit Camera Titles	Main Menu → Camera Setup → Camera Titles → Edit Titles	42
Camera Disable	Main Menu → Camera Setup → Camera Disable	42
Telemetry Enable	Main Menu → Telemetry → Telemetry Enable	45
Record Quality	Main Menu → Record → Record Quality	29
Installer Password	Main Menu → Passwords → Installer Password	49
Auto Disable Now	Main Menu → Camera Setup → Camera Disable → Auto Disable Now	42

BASIC USER OPERATIONS



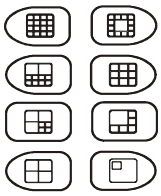
1. **Multiscreen Selection Buttons**: Select 16, 10, 7, and 4 way multiscreen displays.
2. **Monitor Selection Buttons**: Select Monitor A or Monitor B.
3. **Multiscreen Selection Buttons**: Select 13, 9, 6 way, and picture-in-picture multiscreen displays.
4. **Monitor Selection Buttons**: Select Monitors C, D, or E.
5. **Number Buttons**: Select Cameras 1 through 16.
6. **Reverse Play Button**: Begin playback in reverse.
7. **Freeze Button**: Freeze camera images on-screen in Live mode. Pause playback.
8. **Play Forward Button**: Begin playback.
9. **Jog/Shuttle**: Controls playback speed and menu selections. The **Jog** is the inner dial and the **Shuttle** is the outer dial.
10. **Menu Button**: Provides access to on-screen menus.
11. **Power Indicator**: Indicates power on/off condition.
12. **Alarm button**: Acknowledge and silence alarms.
13. **Sequence Button**: Sequence camera views.
14. **Zoom Button**: Provides a X2 digital zoom.
15. **Function Button**: Used in conjunction with the **Number** buttons to run macros.
16. **Record Button**: Start and stop recording.
17. **Stop Button**: Stop playback and return to Live mode.
18. **Search Button**: Access to stored video data.
19. **Enter Button**: Confirm selections in menus.

Important Note: If telemetry is enabled via a remote keyboard, the front panel controls on the MDR are disabled. To re-establish front panel control, ensure that telemetry is switched off at the remote keyboard.

The MDR has three principal modes of operation—Live Viewing, Playback and Recording. All three of these modes can operate simultaneously. In Live mode, the following operations are available:

Full Screen Display
Select any camera for full screen display by pressing the **Number** button of the desired camera. Pressing the same **Number** button again displays the Status Display Box. Pressing the same button a third time displays any associated ATM or cash register ASCII text.

Multiscreen Display
In Live Multiscreen mode, press one of the **Multiscreen** buttons to activate the multiscreen display on the currently selected monitor (Monitor A or Monitor B). Live multiscreens are displayed with grey borders. For detailed information about multiscreen displays, see page 18.



Multiscreen Display With Sequencing
If a multiscreen display does not include all of the cameras, the remaining cameras can be sequenced in the bottom right cameo. While in a multiscreen display, press the **Sequence** button to begin sequencing.

For detailed information about sequencing, see page 20.

Sequenced Full Screen Display
While in a full screen display, press the **Sequence** button to begin full screen sequencing.

The sequence list and dwell times are programmable. For detailed information about programming the sequence list see page 20.

Zooming
To activate the X2 digital zoom, select the full screen display of the camera that is to zoom, then press the **Zoom** button. Zooming will be indicated by the LED located directly above the **Zoom** button. Zooming is also indicated as **ZOOM** on the primary monitor. Zooming works with frozen and non-frozen images. Zoomed images can also be frozen. While zoomed, rotate the **Jog/Shuttle** to pan and tilt across the image. Please note, the camera does not move during digital pan/tilt.

Press the **Zoom** button again, or another camera button to cancel the zoom operations.

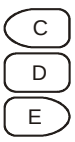
Note: If the **Zoom** button is pressed while in a multiscreen display, the camera from the last active cameo is selected for full screen display. Press the **Zoom** button again to activate the zoom operation.

Freezing
Pressing the **Freeze** button freezes all camera images on-screen. Full screen freezing is indicated as **FRZ** on-screen. Multiscreen freezing is indicated as a flashing asterisk in each frozen cameo. Individual cameos can be frozen in Active Cameo mode (see page 19). Press the **Freeze** button again or any **Number** button to cancel freeze operations.

Selecting Monitor B
To control Monitor B, press the **Monitor B** button. The Monitor B LED will light to indicate that the number keypad now controls Monitor B.

Press the **Monitor A** button again to return the keypad control to Monitor A.

Selecting Monitors C, D and E
To control Monitors C, D or E, press the corresponding **Monitor** button. The Monitor LED will light to indicate that the Monitor has been selected.



PLAYBACK

Playback is always displayed on Monitor A. Playback multiscreen borders are black, as opposed to the grey borders of the live multiscreens. When in Playback mode, Monitor B continues to display full or multiscreen live images.

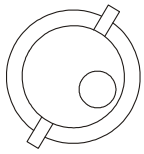
To begin playback, press the **Play Forward** or **Reverse Play** button.

Play Forward
When the **Play Forward** button is pressed, the unit will play forward at the rate the data was recorded. While in Playback mode, the user may change the playback direction, playback speed, etc. To return to Play Forward operations, press the **Play Forward** button.

Reverse Play
To begin reverse playback, press the **Reverse Play** button.

Fast Forward and Rewind
During playback, rotate the **Shuttle** (the outer dial) clockwise to view data at a higher than normal rate. Rotate the **Shuttle** anti-clockwise to view data in reverse at a higher than normal rate.

Increasing the amount of rotation increases the rate of playback.



Auto Pause
During playback, moving the **Jog** (the inner dial) in any direction will freeze playback. Depress the **Freeze**, **Play Forward** or **Reverse Play** buttons to continue playback.

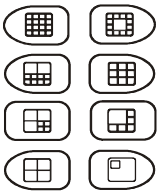
Freeze
During playback, press the **Freeze** button. This feature pauses all full screen and multiscreen images

Single Frame Advance & Single Frame Rewind
Whilst in Freeze or Pause mode, rotate the **Jog** (the inner dial) to view the frame directly before or after the frame currently displayed on-screen.

Stop Playback
To stop playback and return to Live Multiscreen mode on Monitor A, press the **Stop** button.

Multiscreen Display
During playback, press one of the **Multiscreen** buttons to activate a multiscreen display. The 6-way and PIP multiscreen displays are not available in Playback mode.

For detailed information about multiscreen displays, see page 18.



Multiscreen Display With Sequencing
If a multiscreen display does not include all of the cameras, the remaining cameras can be sequenced in the bottom right cameo. While in a multiscreen display, press the **Sequence** button to begin sequencing.

For detailed information about sequencing, see page 20.

Full Screen Display
Select any camera for full screen display by pressing the **Number** button of the desired camera. Pressing the **Number** button again displays the Status Display Box. Pressing the same button a third time displays any associated ATM or cash register ASCII text.

Zooming
To activate the X2 digital zoom, select the full screen display of the camera that is to zoom, then press the **Zoom** button. Zooming will be indicated by the LED located directly above the **Zoom** button. Zooming is also indicated as **ZOOM** on the monitor. Zooming works with frozen and non-frozen images. Zoomed images can also be frozen. While zoomed, rotate the **Jog/Shuttle** to pan and tilt across the image. Please note, the camera does not move during digital pan/tilt.

Press the **Zoom** button again, or another camera button to cancel the Zoom operations.

Note: If the **Zoom** button is pressed while in a multiscreen display, the camera from the last active cameo is selected for full screen display. Press the **Zoom** button again to activate the zoom operation.

PLAYBACK

Searching Recorded Data

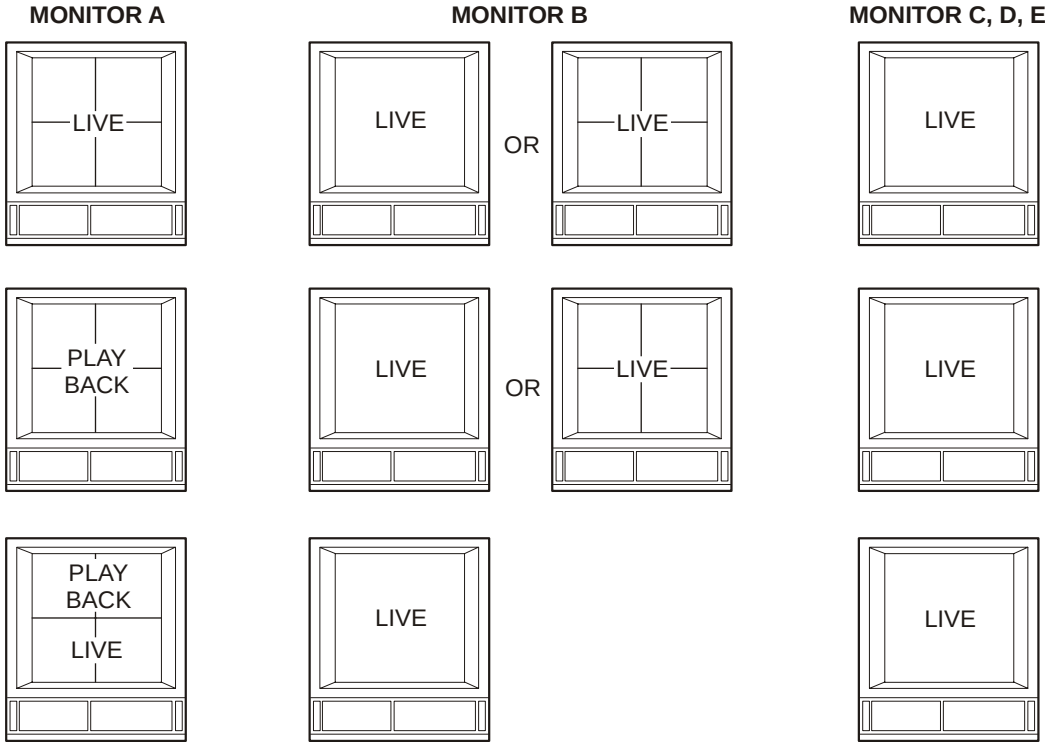
The MDR has a powerful search interface feature that allows the user to search for data on the internal hard disk or an external archive device. The user may search the data for previous recording sessions, text insertion, alarm conditions or for motion in a selectable area of the scene. Because the search interface is so dynamic, the search interface is covered in detail in a separate section of this manual. See page 58 for more details.

RECORDING

To begin recording, press the **Record** button. Recording will be indicated by the LED located directly above the **Record** button. The unit always starts recording at the end of previously recorded data. The unit will continue recording until the **Record** button is pressed again.

Monitor Displays During Recording

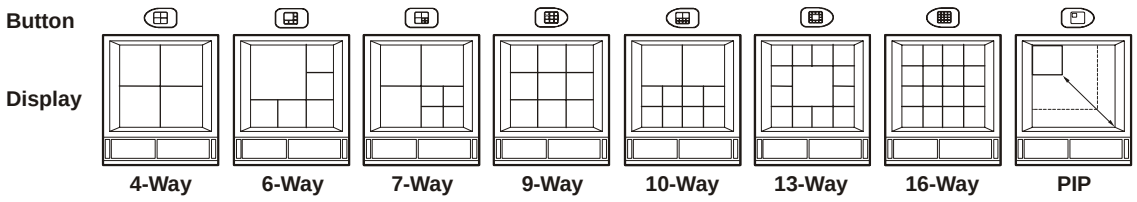
Multiscreen Live and Playback displays on Monitor A and Monitor B are not affected by recording operations.



DISPLAY OPTIONS

Available Multiscreen Displays

Use the **Multiscreen** buttons to activate the multiscreen display on Monitor A or Monitor B. Pressing an individual **Multiscreen** button will display the corresponding multiscreen.



The multiscreen display is limited to the number of camera inputs on the unit.

The camera assignments for each multiscreen is retained (in non-volatile memory) for both Live and Playback multiscreen mode on Monitor A, as well as Live multiscreen mode on Monitors B, C, D and E.

PIP: Use the **Jog/Shuttle** to adjust the location and size of the PIP display. Please note that the PIP display is only available on Monitor A in Live mode when Monitor B is in full screen display mode.

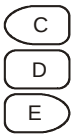
DISPLAY OPTIONS

Displays on Monitors C through E
These are full screen and analog monitors, displaying only Live images (regardless of the mode selected). A sequenced or fixed display of any one camera can be selected on Monitors C through E.

△CAUTION
The time, date, alarm, video loss messages, titles and all on screen data on Monitors C through E are related to current, live data and must not be confused with the playback data that might be displayed on Monitors A or B.

Independent Sequence List and Dwell Times
Independent full screen sequences may operate on Monitors A through E. See page 20 for more details.

Operating on Monitors C through E
To control Monitors C, D or E, press the corresponding **Monitor** button. The Monitor LED will light to indicate that the Monitor has been selected. While the LED remains on, the **Number** buttons and the **Sequence** button operate on the selected monitor, and not on Monitor A.



Selecting a Camera Full Screen on Monitors A through E
To select a full screen display of an individual camera, select the required monitor (the LED for the selected monitor will come on) and then press the **Number** button for the required camera.

Starting Sequencing on Monitors A through E
To select a sequence, select the required monitor (the LED for the selected monitor will come on) and then press the **Sequence** button.

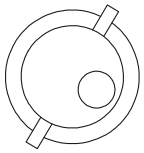
Cancelling Sequencing on Monitors A through E
To cancel a sequence, select the monitor which the sequence is running on (the LED for the selected monitor will come on) and then press the **Sequence** button or a **Number** button.

ACTIVE CAMEOS

A cameo is defined as any cell within a multiscreen display. Active Cameo mode allows the user to access and edit each cameo individually.

Entering Active Cameo Mode
While viewing a multiscreen display, enter Active Cameo mode by pressing the **Enter** button. Active Cameo mode is indicated on-screen by flashing the number and titles of the active cameo. The LED above the **Enter** button is also lit. By default, the top left cameo is activated.

Selecting Cameos
Select a cameo using the **Jog/Shuttle** to navigate around the multiscreen display. Rotating the **Jog** selects the next screen up or down a row. Rotating the **Shuttle** selects the next screen in numerical order. The active cameo will always be indicated by the flashing camera number and titles.



Selecting Cameras
Display any camera in the active cameo by pressing the **Number** button of the desired camera. Once a camera has been selected, the active cameo advances to the next cameo on the right.

The camera selection only changes the multiscreen currently being displayed. Each multiscreen must be configured separately. Changes to the multiscreen display are saved in non-volatile memory, and will be retained even if power is removed from the unit.

Freezing
Press the **Freeze** button to freeze the image in the selected cameo. Each frozen cameo is indicated as a flashing asterisk on-screen. Press the **Freeze** button again to cancel freeze operations.

SEQUENCING

The sequencing feature allows a camera to be displayed briefly on-screen, before advancing to the next camera in the sequence list. The default sequence list displays each camera in numerical order.

Dwell Time

The dwell time is the amount of time each camera is displayed on-screen before advancing to the next camera. The Full Screen and Multiscreen Dwell Times are separately programmable in the menu system.

For detailed information about configuring the dwell times in the menu system, see page 27.

Autolist™ Custom Sequence List

The Autolist™ feature allows the user to create a custom sequence list, controlling the order the cameras are displayed and the dwell time. Separate Autolists may be created for Monitor A (Live and Playback mode) and Monitor B through E (Live mode). Using a **Monitor** button, select the monitor to be programmed. Then, using a **Number** button, select any camera for full screen display.

Note: The unit must be in full screen display mode before starting to create the sequence list. This initial camera is not part the sequence list.

To begin recording the Autolist sequence, press the **Alarm** button and **Sequence** button simultaneously. Autolist Program mode is indicated as **PGM** on-screen. Recording starts when the first **Number** button is pressed. Press the **Number** buttons in the order that the cameras are to appear on-screen. The amount of time between button presses determines the dwell time. During sequence list programming, pressing any button other than a **Number** button or the **Sequence** button voids the sequence list.

To end the recording, press the **Sequence** button. The amount of time between pressing the last **Number** button and the **Sequence** button determines the dwell time for the final camera in the sequence list.

Returning To The Default Sequence List

The default sequence list is all cameras in numeric order with a three second dwell time.

To return the unit to the default sequence list, go to the **Main Menu** → **Sequencing** → **Fullscreen Dwell** menu. Select 03 seconds by rotating the **Jog**, then press the **Enter** button.

Note: Any alteration of the dwell time from this menu will cancel the sequence list and return to the default (numeric) order.

Sequencing In Cameos

While viewing a multiscreen display, additional cameras (cameras not shown in the multiscreen display) can be sequenced in the lower right hand cameo by pressing the **Sequence** button. The sequence list is not programmable, but the dwell time can be adjusted in the menu system. Press the **Sequence** button again to cancel sequencing.

ON-SCREEN INDICATORS

There are five types of on-screen indicators.

- **Camera Titles**: Displays the camera number and the camera title.
- **Status Indicators**: Displays time, date, and hard disk record time left.
- **Conditional Indicators**: Displays indicators for freeze, zoom, alarm, motion detection, video loss, Autolist™ Program mode, Macro Record and Macro Playback mode.
- **Status Display Box**: Displays archive device, network status and image quality setting (Playback mode only).
- **Text Display Box**: Displays ATM/POS text data.

Camera Titles

Camera titles are displayed on either the upper or lower corner of the left hand side of the screen. The camera title can be changed in the menu system (see page 42).

The user can also change display position and colour. To change the colour and position of the camera titles, select a camera for full screen display, then press the **Enter** button to advance to the next display setting. Repeatedly pressing the **Enter** button advances the display settings through the sequence show in the table on the right.

Example: Select **Camera 1** for full screen display. Using the **Enter** button, cycle through the sequence shown on the right. Each time the position cycle is completed, the unit advances the Status Indicator colour. Choose Black, White or Grey.

Position	Colour
Top Left	Black
Top Left	White
Top Left	Grey
Bottom Left	Black
Bottom Left	White
Bottom Left	Grey
Title not displayed	

ON-SCREEN INDICATORS

Status Indicators

Status indicators are displayed in the upper right hand corner of the screen.

Status indicators include:

- Time and Date. The Time and Date format can be changed in the menu system, or it can be turned off altogether. See page 25 for more details.
- Time remaining on hard disk(s).

Conditional Indicators

Condition	Full Screen Indicator	Multiscreen Indicator
Alarm	**ALM**	**A** in cameo of camera in alarm
Autolist™ Program mode	**PGM**	**PGM**
Freeze	**FRZ**	Asterisk in frozen cameo
Macro Record mode	**F** followed by Macro Number	**F** followed by Macro Number
Motion Detection	**M**	**M** in cameo with motion detection
Videoloss	**VDL**	**V** in cameo with videoloss
Zoom	**ZOOM**	**ZOOM**

Status Display Box

A Status Display Box can be viewed by pressing the same **Number** button twice. Status indicators include:

On a Live full screen:

- **Archive Status**: The archive status can be **Not Connected**, **Not Ready**, **Ready**, **Ejecting**, **Play**, and ***timeleft***. *Timeleft* indicates the amount of time before the archive medium is full (only available if background archiving turned on).
- **Network**: Displays all current network connections. Normal connection is displayed as **ip.ip** or **—-** if there is no connection. Live connections are displayed as **E1: ip.ip**, **E2: ip.ip, etc.** (where ip.ip represents the last 2 bytes of the IP address). POTS connection is displayed as **IP 1.1**.

On Playback full screen:

- All the above, including image quality setting: **High, Medium, Standard**.

ATM/POS Text Display

Pressing the same **Number** button three times brings up an ATM/POS text display. This feature can be used during Live viewing mode to verify that the MDR is receiving ATM/POS text, or in Playback mode to review recorded text and video.

TRIPLEX MODE

Triplex mode allows the display of both live and playback images to appear on Monitor A simultaneously. Live images have grey borders, while playback images have black borders.

To enter Triplex mode, press the **Play Forward** button while in Play Forward mode. Alternatively, press the **Play Reverse** button while in Play Reverse mode. The LED above the relevant **Play** button and the LED above the **Stop** button turn on to indicate that the unit is in Triplex mode.

Monitor B always switches to a full screen live display whenever Triplex mode is entered.

Play Forward

When in Play Forward mode, press the **Play Forward** button to enter Triplex mode. When the **Play Forward** button is pressed again, the unit will revert back into the normal Playback mode. While in Triplex mode, if reverse play is in progress, the **Play Forward** button will change the playback direction.

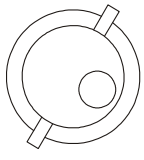
Reverse Play

When in Reverse Play mode, press the **Reverse Play** button to enter the Triplex mode. When the **Reverse Play** button is pressed again, the unit will revert back into the normal Playback mode. While in Triplex mode, if forward play is in progress, the **Reverse Play** button will change the playback direction.

Fast Forward and Rewind

In Triplex mode, rotate the **Shuttle** (the outer dial) clockwise to view playback images at a higher than normal rate. Rotate the **Shuttle** counter-clockwise to view playback images (in reverse) at a higher than normal rate

Increasing the amount of rotation increases the rate of playback. Live images are not affected.



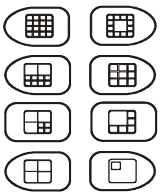
TRIPLEX MODE

Freeze
In Triplex mode, press the **Freeze** button to pause all multiscreen images, both Live and Playback.

Single Frame Advance & Single Frame Rewind
Whilst in Freeze or Pause mode, rotate the **Jog** (the inner dial) to view the frame directly before or after the frame displayed on-screen. Only the playback images are affected.

Stop
To stop Triplex mode and return to Live mode on Monitor A, press the **Stop** button.

Multiscreen Display
In Triplex mode, press one of the **Multiscreen** buttons to activate a multiscreen display. The 6-way and PIP multiscreen displays are not available in Triplex mode. For detailed information about multiscreen displays, see page 18.



The Live and Playback images in a multiscreen display may be transposed by pressing the **Multiscreen** button that corresponds with the current multiscreen display (e.g., If the current display is a 13-way multiscreen with the centre cameo being a playback image and the rest of the cameos being live images, pressing the **13-Way Multiscreen** button will result in the centre cameo being live and the rest of the cameos being playback images.

Multiscreen Display With Sequencing
The bottom right cameo of any multiscreen display will start sequencing when the **Sequence** button is pressed. If this camera is a playback image, the sequencing will include all the non-displayed playback cameras, and vice versa for a live image.

Full Screen Display
Select any camera for full screen display by pressing the **Number** button of the desired camera. Pressing the **Number** button again displays the Status Display Box. Pressing the same button a third time displays any associated ATM or cash register ASCII text.

Sequenced Full Screen Display
While in a full screen display, press the **Sequence** button to begin full screen sequencing. The sequence list and dwell times are programmable.

For detailed information about programming the sequence list see page 20.

Zooming
To activate the X2 digital zoom, select the full screen display of the camera that is to zoom, then press the **Zoom** button. Zooming will be indicated by the LED located directly above the **Zoom** button. Zooming is also indicated as **ZOOM** on the monitor. Zooming works with frozen and non-frozen images. Zoomed images can also be frozen. While zoomed, use the **Jog/Shuttle** to pan and tilt across the image. Please note, the camera does not move during digital pan/tilt.

Press the **Zoom** button again, or another camera button to cancel the zoom operations.

Note: If the **Zoom** button is pressed while in a multiscreen display, the camera from the last active cameo is selected for full screen display. Press the **Zoom** button again to activate the zoom operation.

THE PRINT IMAGE FEATURE

Pressing the **Function and Zoom** button will print the currently displayed image. If a multiscreen display is the currently selected display mode, the MDR will switch to a single image display of the last selected full screen camera, freeze the image, and send it to the default printer.

Printer Setup
A HP Deskjet 3820 and a Hawking Print Server PN7127P are required for the operation of the Print Image feature. The printer and print server must be connected to the same local network as the MDR. The printer and print server must be on-line and operational.

The MDR must be aware of the print server's IP address. The IP address can be input under **Main Menu** → **Communications** → **Ethernet** → **Ethernet Settings** (see page 48).

The MDR can be configured using a menu based system that can be viewed when the unit is connected to a monitor. The menu system contains four pull-down menus and a number of pop-up menus.

Accessing the Menu System

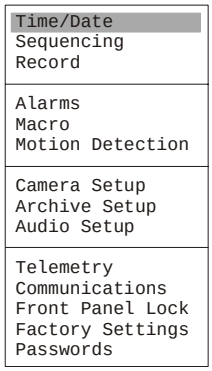
The menu system is accessed by pressing the **Menu** button. A password dialog will appear on the primary monitor. Use the **Number** buttons to enter one of the two available passwords. The Operator password provides limited access to the menu system, and if this password is entered, only the **Operator** and **System View** menus will be available. The Installer Password provides complete menu access. Default passwords can be found on page 9.

Once a correct password has been entered, the menu system will be opened. There are four menus, and each menu is covered in detail in this manual. Menus and menu items appear in the manual in the same order they appear on-screen. The four available menus are as follows:

- **Main Menu**
- **QuickInstall Menu**
- **Operator Menu**
- **SystemView Menu**

Navigating the Menu System

When the menu system is first accessed, only the menu bar is displayed. Use the **Shuttle** to move to the desired menu. To open the highlighted menu, rotate the **Jog**.



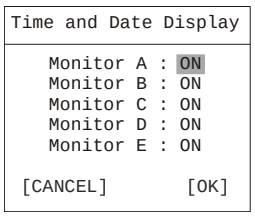
Once the required drop-down menu is opened, rotate the **Jog** to move the cursor through the items in it. A drop-down menu will look like the example on the left.

Once the required option is highlighted in the drop-down menu, press the **Enter** button. This will open up either a sub-menu, where further options are available, or a dialog. It is in these dialogs that the MDR settings can actually be configured.

To return to the previous menu, press the **Menu** button.

Dialogs usually have a parameter (or several parameters) from which the user can make a selection or change the value of the parameter.

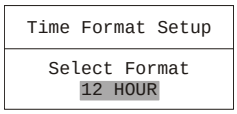
There are two types of dialog:



The first type has **[OK]** or **[CANCEL]** options at the bottom.

Use the **Jog** to select the parameter that is to be changed, and then use the **Shuttle** to change the value. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

The **Menu** button can also be used to exit the dialog at any time.



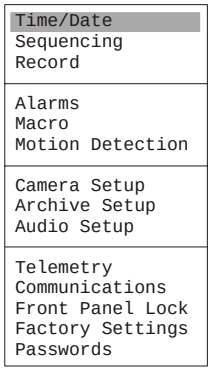
The second type of dialog is different in that there are no **[OK]** or **[CANCEL]** options at the bottom.

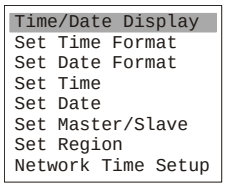
Use the **Jog** to change the value of the parameter. Press the **Enter** button to confirm the selection and exit the dialog, or press the **Menu** button to exit the dialog without making changes.

Once all the settings in a particular drop-down menu have been configured as required, press the **Menu** button to return to the menu bar. From the menu bar, select another drop-down menu or press the **Menu** button again to exit the menu system completely.

Note: There are a number of menu shortcuts that can be used. In dialogs that have two settings per camera, the **Zoom** button can be used to toggle all selections. This provides a quick and easy way to enable or disable all cameras for a particular feature. In dialogs that provide settings per camera, a particular camera may be accessed directly by pressing the associated **Number** button. Rotate the **Shuttle** to modify the setting.

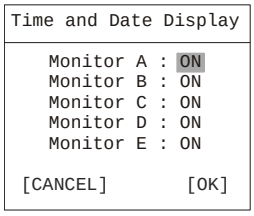
THE MAIN MENU





When the **Time/Date** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can specify:

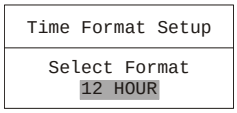
- Which monitor will display the time and date.
- The time format: 12 or 24 hours.
- The date format: MM/DD/YY, DD/MM/YY, or YY/MM/DD.
- The time and date.
- Whether the unit's clock is a master or slave.
- The region and time zone.
- Clock synchronisation between the MDR and a network server.



Time/Date Display

This menu option displays the **Time and Date Display** dialog. It is used to specify which monitors the time and date will be displayed on.

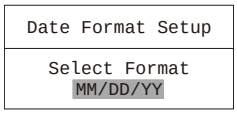
Use the **Jog** to navigate, then use the **Shuttle** to change the values. To save changes, use the **Jog** to select **[OK]** and press the **Enter** button. To exit without saving changes, use the **Jog** to select **[CANCEL]** and press the **Enter** button. Alternatively, press the **Menu** button.



Set Time Format

This menu option displays the **Time Format Setup** dialog. In this dialog, use the **Jog** to select the desired time format. The options available are **12 HOUR** and **24 HOUR**

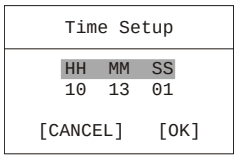
Press the **Enter** button to confirm the selection and exit the dialog, or press the **Menu** button to exit the dialog without making changes.



Set Date Format

This menu option displays the **Date Format Setup** dialog. In this dialog, use the **Jog** to select the desired date format. The options available are **DD/MM/YY**, **MM/DD/YY** and **YY/MM/DD**.

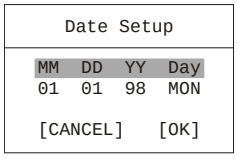
Press the **Enter** button to confirm the selection and exit the dialog, or press the **Menu** button to exit the dialog without making changes.



Set Time

This menu option displays the **Time Setup** dialog, where the time can be set. To do this:

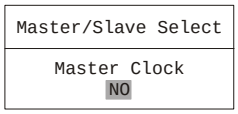
1. With **HH MM SS** highlighted, press the **Enter** button. The highlighting will move to the row of numbers.
2. Enter the time in hours, minutes and seconds. Use the **Jog** to change the values. Use the **Shuttle** to navigate among the three fields.
3. Press the **Enter** button to confirm the selection.
4. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



Set Date

This menu option displays the **Date Setup** dialog, where the date can be set. To do this:

1. With **MM DD YY DAY** highlighted, press the **Enter** button. The highlighting will move to the row of numbers.
2. Enter the date in months, days and years. The day of the week will update automatically. Use the **Jog** to change the values. Use the **Shuttle** to navigate among the three fields.
3. Press the **Enter** button to confirm the selection.
4. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



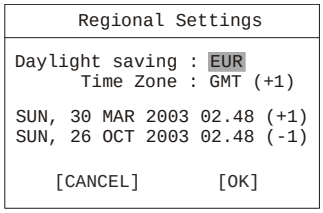
Set Master/Slave

If several multiplexers are installed and connected via a RS485 network, one of the multiplexers may be set as the master clock. This unit will control the date and time (including daylight savings time) for all of the other units. To do this, use the **Master/Slave Select** dialog.

Select ONE unit from the RS485 network as the master clock by selecting **YES** in the dialog. All other units must be set as **NO** (default setting). Press the **Enter** button to confirm the selection and exit the dialog, or press the **Menu** button to exit the dialog without making changes.

Set Region

This menu option allows the user to select the region and time zone in which the MDR unit will be used.



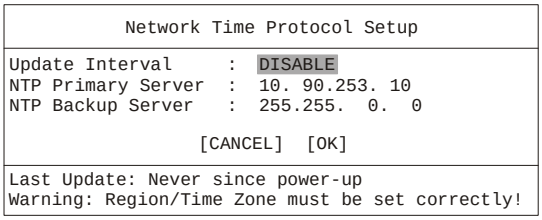
To configure the region and time zone settings, follow the steps below:

1. Using the **Shuttle**, set the relevant region for the **Daylight Saving** option. The options are:
   - **OFF**
   - **USA** (Areas within the North American continent)
   - **EUR** (Areas within the European continent)
   - **AUS** (Areas within the Australasian continent)
2. Use the **Jog** to navigate to the **Time Zone**.
3. Using the **Shuttle**, set the time zone in relation to GMT. The time zone must be set correctly to ensure that the DST adjustments are made at the right time. It is also required for accurate email time stamping.
4. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Note: The clock will only be automatically adjusted once on a given time and date. If the clock is manually set back before the last DST change, the time will not get automatically adjusted again for that same time change.

Network Time Protocol Setup

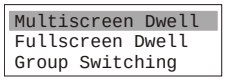
The unit can act as a Simple Network Time Protocol Client. When enabled, the MDR will retrieve the time and date from a Network Time Protocol Server via UDP packet exchange and the user will never have to set the time manually. To set up Network Time, select the **Network Time Protocol Setup** option. The **Network Time Protocol Setup** dialog is displayed:



1. Set the **Update Interval** using the **Shuttle**. The options are **Disable**, **Once per Day**, **Twice per Day** and **Once per Hour**.

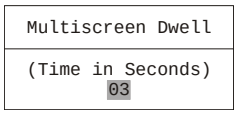
   When Network Time is enabled, the unit retrieves the time after each power-up and periodically after the set period of time has elapsed (i.e., 24 hours, 12 hours). The unit also retrieves the time whenever a user changes the settings in this dialog (as long as Network Time is not disabled). To disable Network Time, set **Update Interval** to **Disable**.
2. Navigate to the **NTP Primary Server** option using the **Jog**. This field is used to set the primary NTP server address.
3. Use the **Jog** to select which part of the address is to be edited and use the **Shuttle** to adjust the values.
4. Navigate to the **NTP Backup Server** option using the **Jog**. This field is used to set the address of the backup NTP server. This server will only be contacted when the primary server does not answer.
5. Use the **Jog** to select which part of the address is to be edited and use the **Shuttle** to adjust the values.
6. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Note: The user must set the Regional Settings (see above) to the correct values when enabling Network Time.



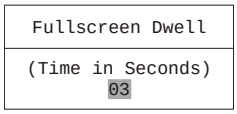
When the **Sequencing** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can:

- Specify the multiscreen dwell time.
- Specify the full screen dwell time.
- Enable and setup Group Switching.



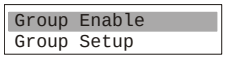
Multiscreen Dwell
The multiscreen dwell time is the amount of time each camera in a multiscreen sequence is displayed on-screen before the sequence advances to the next camera. It can be configured by selecting this option. The **Multiscreen Dwell** dialog is displayed.

Rotate the **Jog** to change the dwell time (from 1 to 30 seconds). The default is 3 seconds. Press the **Enter** button to confirm the dwell time and exit the dialog, or press the **Menu** button to exit the dialog without making changes.



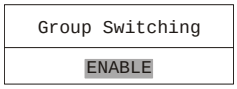
Fullscreen Dwell
The full screen dwell time is the amount of time each camera in a full screen sequence is displayed on-screen before the sequence advances to the next camera. It can be configured by selecting this option. The **Fullscreen Dwell** dialog is displayed.

Rotate the **Jog** to change the dwell time (from 1 to 30 seconds). The default is 3 seconds. Press the **Enter** button to confirm the dwell time and exit the dialog, or press the **Menu** button to exit the dialog without making changes.



Group Switching
Group Switching is a feature that allows a user to display groups of four cameras on the four auxiliary monitors (B-E). When the **Group Switching** menu item is selected, a sub-menu is displayed. Use this sub-menu to:

- Enable or disable Group Switching.
- Setup Group Switching.



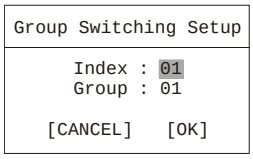
Group Enable
When this menu item is selected, the **Group Switching** dialog is displayed. Use this dialog to enable or disable Group Switching.

Use the **Jog** to select the desired setting. Press the **Enter** button to confirm the selection and exit the dialog, or press the **Menu** button to exit the dialog without making changes.

Activating Group Switching
When Group Switching is enabled, camera groups are set up and defined using the **Alarm Action Setup** dialog (see page 34). Once enabled, selecting any auxiliary monitor and starting or stopping sequence mode will make all the auxiliary monitors start or stop sequencing as a group. To enter Group Switching mode, follow the steps below:

1. Select a monitor (B through E) by pressing the relevant **Monitor** button.
2. Press the **Sequence** button. Monitors B through E then begin simultaneous sequencing.

Group Switching can be deactivated by pressing the **Sequence** button again. Only selected monitors will run a sequence.



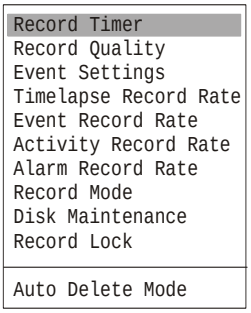
Group Setup
Select this menu item to display the **Group Switching Setup** dialog. This dialog allows the user to specify the order in which camera groups are switched. The **Index** parameter denotes the entry in the list, the **Group** parameter denotes the camera group that will be selected. Groups are defined in the **Alarm Action Setup** dialog (see page 34).

Use the **Shuttle** to select an **Index** number. Use the **Jog** to navigate to the **Group** parameter and then use the **Shuttle** to select the camera group that is to be placed in that position. Repeat this procedure to compile the Group Switching list index by index. When the list is complete, terminate it by selecting the blank value in the **Group** parameter.

Example: The user wants to select three groups in the following order: 1, 2, 1, 2, 3. The Group Switching setup list would look like this as it is stepped through:

Index	01 02 03 04 05 06
Group	01 02 01 02 03

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]** and then press the **Enter** button.

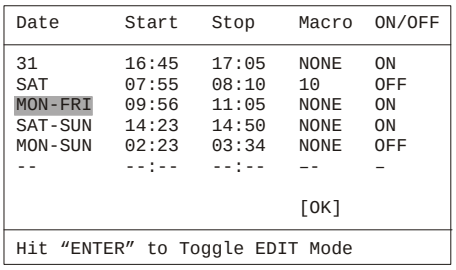


When the **Record** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can specify:

- The record quality: High, Medium or Standard.
- Whether a camera is to be used for event recording, timelapse recording or both.
- The Timelapse Record Rate per camera.
- The Event Record Rate per camera.
- The Activity Record Rate per camera.
- The Alarm Record Rate.
- Whether the Record Lock feature is to be used.
- Whether to perform disk maintenance by deleting, undeleting or destroying previously recorded video.
- How the unit will handle data overwrite issues once the hard disk becomes full.

Record Timer

This menu item allows the user to program, edit and delete timer-recorded events.

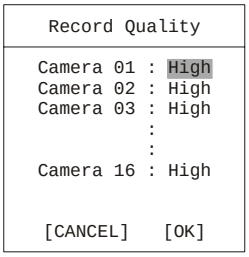


To create a timed recording, follow the steps below:

1. Using the **Jog** to navigate, highlight the **Date** parameter of the last line item (indicated with double dash marks).
2. Press the **Enter** button to enter the Edit mode. The user may press the **Enter** button to exit Edit mode at any time.
3. Use the **Jog** to change the values of the **Date** setting. The values available are:
   - **Date (Day of the Month) -** 1 through 31
   - **Day of the Week -** Monday through Sunday
   - **Range of Days -** All Weekdays (Monday-Friday), All Weekend Days (Saturday-Sunday), Monday-Sunday (Everyday)
4. Use the **Shuttle** to navigate to the **Start** setting.
5. Use the **Jog/Shuttle** to enter the time the recording will begin. The hours and minutes are edited separately. The start and stop times are always configured in a 24-hour clock.
6. Use the **Shuttle** to navigate to the **Stop** setting.
7. Use the **Jog/Shuttle** to enter the time the recording will end. Entering a time before the start time will cause the unit to record until the indicated stop time on the next day.
8. Use the **Shuttle** to navigate to the **Macro** setting.
10. Use the **Jog** to select a macro number that will run during this recording, or select **NONE** is no macro is to run. See page 38 for more details on creating macros.
11. Use the **Shuttle** to navigate to the **ON/OFF** setting.
12. Use the **Jog** to activate, deactivate or delete the recording.
13. When finished, press the **Enter** button to exit the Edit mode. Use the **Jog** to navigate to **[OK]**, then press the **Enter** button to complete the selection.

To delete a timed recording, follow the steps below:

1. Using the **Jog** to navigate up/down and the **Shuttle** to navigate left/right , highlight the **ON/OFF** parameter of the event you wish to delete.
2. Press the **Enter** button to enter the Edit mode.
3. Use the **Jog** to select **DEL** from the menu.
4. Press the **Enter** button to confirm the selection and exit the Edit mode.
5. Use the **Jog** to navigate to **[OK]**, then press the **Enter** button to remove the selection and exit the dialog.



Record Quality

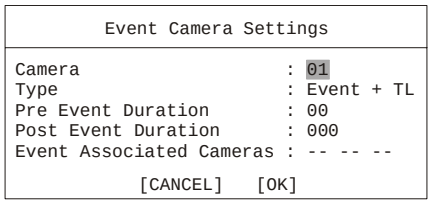
Use this menu item to specify the record quality for each camera. Decreasing the record quality decreases the amount of disk space required to store the images, due to a higher compression scheme.

Use the **Jog** to move between cameras, setting the record quality for each one using the **Shuttle**. **High** record quality provides the best picture quality but uses the most disk space—**Low** record quality provides fair picture quality but uses the least disk space.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Event Settings

An Event is an action that the unit acknowledges by recording at the Event Record Rate. An event is not the cause for an alarm. Events may be created in two ways, via RS232 text insertion or by activity detection. Use this sub-menu to specify how each camera will record during normal and event conditions.



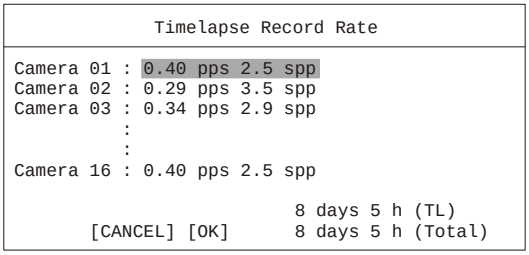
An example of an event could be if a camera is pointed at the front door inside a lobby during business hours. With the **Type** field in this sub-menu set to **Event**, the unit does not record while the doorway is empty. When activity motion detection senses that someone is entering or leaving the doorway, the unit begins recording at the Event Record Rate and stops recording when the motion ceases.

To configure the event camera settings, follow the steps below:

1. Using the **Jog** to navigate, highlight the **Camera** parameter.
2. Using the **Shuttle**, select the camera number that is to be edited.
3. Using the **Jog** to navigate, highlight the **Type** parameter.
4. In the **Type** parameter, use the **Shuttle** to select how the camera will record during normal and event conditions. Select from:
   - **TL**: Record at the Timelapse Record Rate under normal conditions. Does not change record rate during an event. If this option is selected, it is not necessary to complete any further fields in this dialog.
   - **Event**: Record during events at the Event Record Rate. Camera does not record under normal conditions.
   - **Event + TL**: Record at the Timelapse Record Rate under normal conditions. Records at the Event Record Rate during events.
5. Use the **Jog** to navigate to the **Pre Event Duration** parameter.
6. Use the **Shuttle** to specify the period of time the unit should record data ahead of an event trigger, at the Event Record Rate. Select from 0 to 5 seconds.
7. Use the **Jog** to navigate to the **Post Event Duration** parameter.
8. Use the **Shuttle** to specify the period of time the unit should record data after the completion of an event, at the Event Record Rate. Select from 0 to 250 seconds.
9. Use the **Jog** to navigate to the **Event Associated Cameras** parameter.
10. Using the **Jog** to navigate in the parameter and the **Shuttle** to adjust values, enter up to three camera numbers to be associated with this event.
11. Repeat steps 1-10 to set parameters for further cameras.
12. When configuration is complete, use the **Jog** to navigate to **[OK]**, then press the **Enter** button to complete the selection.

Timelapse Record Rate

When this menu item is selected, the **Timelapse Record Rate** dialog is displayed. This dialog is used to specify the Timelapse Record Rate for each camera. This is the rate is at which the unit records under normal conditions, when there are no alarms, events, or activity present. Record rates are measured in both pictures per second (pps) and seconds per picture (spp).



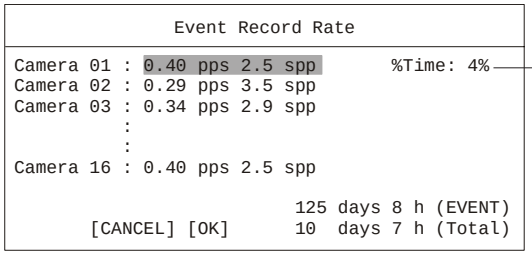
The maximum record rate per camera is inversely proportional to the number of cameras connected to the unit. The fewer cameras connected, the higher the maximum record rate for each camera, and vice versa. The maximum record rate for multiple cameras is 40pps PAL (48pps NTSC). The maximum record rate for a single camera is 25pps PAL (30pps NTSC).

The bottom right corner of the menu contains a record duration calculator. The top line indicates the estimated recording time for the unit in Timelapse record mode only. The bottom line indicates the estimated recording time, taking into consideration the amount of time the unit will spend in Activity, Event, and/or Alarm record modes.

To change the settings in this dialog, rotate the **Jog** to select the required camera, and use the **Shuttle** to change the values for that camera. To save changes and exit the dialog, use the **Jog** to select **[OK]** and then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]** and then press the **Enter** button. Alternatively, just press the **Menu** button.

Event Record Rate

When this menu item is selected, the **Event Record Rate** dialog is displayed. This dialog is used to specify the Event Record Rate for each camera. This is the rate is at which the unit records when an event is activated, by either an RS232 event generation or by activity detection. Record rates are measured in both pictures per second (pps) and seconds per picture (spp).



Estimate of the % of time each camera will spend in Event mode. For example, if you expect to have about 20 total events each day, each lasting 3 minutes on average, then the % of time will be 4% (1 hour/24 hours)

The maximum record rate per camera is inversely proportional to the number of cameras connected to the unit. The fewer cameras connected, the higher the maximum record rate for each camera, and vice versa. The maximum record rate for multiple cameras is 40pps PAL (48pps NTSC). The maximum record rate for a single camera is 25pps PAL (30pps NTSC).

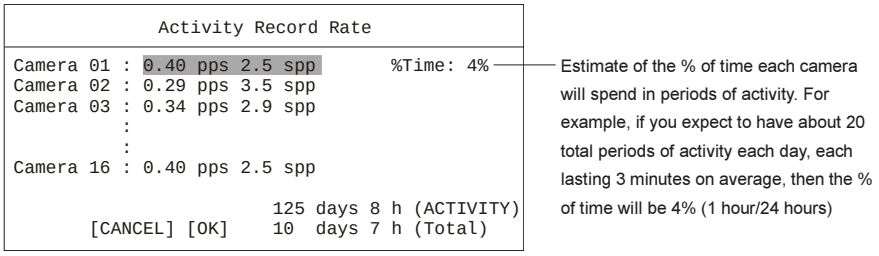
The bottom right corner of the dialog contains a record duration calculator. The top line indicates the estimated recording time of the cameras in Event record mode only. The bottom line indicates the estimated recording time, taking into consideration the amount of time the unit will spend in Timelapse, Activity, Event, and/or Alarm record modes.

To change the settings in this dialog, rotate the **Jog** to select the required camera, and use the **Shuttle** to change the values for that camera. It is also possible to adjust the **%Time** parameter using the **Shuttle**.

To save changes and exit the dialog, use the **Jog** to select **[OK]** and then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]** and then press the **Enter** button. Alternatively, just press the **Menu** button.

Activity Record Rate

When this menu item is selected, the **Activity Record Rate** dialog is displayed. This dialog is used to specify the Activity Record Rate for each camera. This is the rate is at which the unit records when the camera is in normal Timelapse Record Mode and activity is detected in the camera scene. Activity should not be linked to an Event, in which case the Event Record Rate will be used. Record rates are measured in both pictures per second (pps) and seconds per picture (spp).



The maximum record rate per camera is inversely proportional to the number of cameras connected to the unit. The fewer cameras connected, the higher the maximum record rate for each camera, and vice versa. The maximum record rate for multiple cameras is 40pps PAL (48pps NTSC). The maximum record rate for a single camera is 25pps PAL (30pps NTSC).

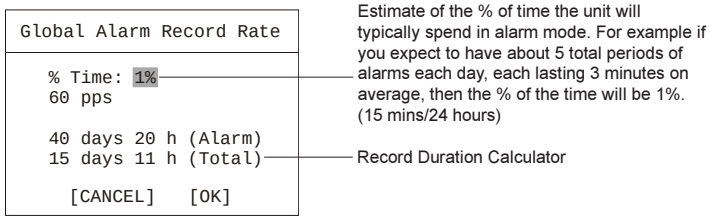
The bottom right corner of the dialog contains a record duration calculator. The top line indicates the estimated recording time of the cameras in Activity record mode only. The bottom line indicates the estimated recording time, taking into consideration the amount of time the unit will spend in Timelapse, Activity, Event, and/or Alarm record modes.

To change the settings in this dialog, rotate the **Jog** to select the required camera, and use the **Shuttle** to change the values for that camera. It is also possible to adjust the **%Time** parameter using the **Shuttle**.

To save changes and exit the dialog, use the **Jog** to select **[OK]** and then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]** and then press the **Enter** button. Alternatively, just press the **Menu** button.

Alarm Record Rate

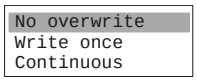
When this menu item is selected, the **Alarm Record Rate** dialog is displayed. This dialog is used to specify the Alarm Record Rate—the rate at which the unit records during an alarm.



The bottom of the dialog contains a record duration calculator. The top line indicates the estimated recording time of the cameras in Alarm record mode only. The bottom line indicates the estimated recording time, taking into consideration the amount of time the unit will spend in Timelapse, Activity, Event, and/or Alarm record mode.

To adjust the **%Time** and **Pictures Per Second (pps)** parameters, navigate using the **Jog** and use the **Shuttle** to change the values. To save changes and exit the dialog, use the **Jog** to select **[OK]** and then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]** and then press the **Enter** button. Alternatively, just press the **Menu** button.

Note: The configuration of the Alarm Record Rate is closely associated with the Alarm Record Mode. For detailed information about configuring the Alarm Record Mode, see page 35.



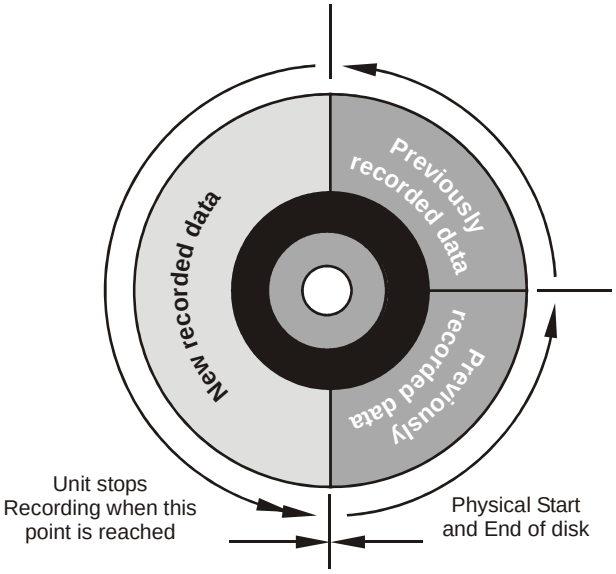
Record Mode

When this menu item is selected, a sub-menu is displayed with three options. Use this sub-menu to specify how the unit will handle data overwrite issues once the hard disk becomes full. The MDR can handle disk overwrite issues in three ways:

- **No Overwrite**
- **Write Once**
- **Continuous Overwrite**

See overleaf for more details about the three disk overwrite modes.

Use the **Jog** to select the required setting. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

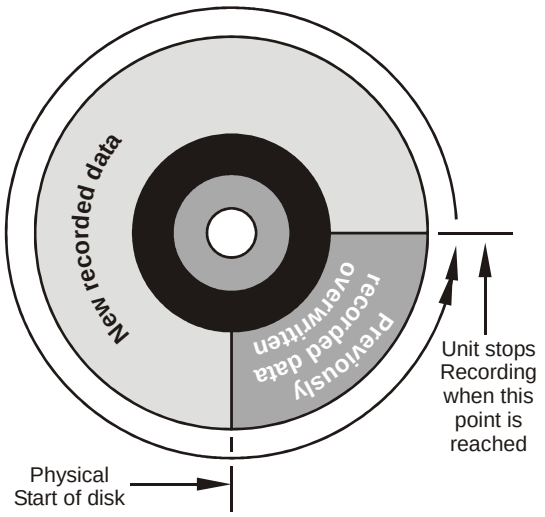


No Overwrite Mode

No Overwrite

When **No Overwrite** mode is selected, the MDR will function as follows:

- Recording always starts at end of last recording.
- Recording stops when end of disk is reached (when disk is full).
- When the end of the disk is reached, the unit displays an on-screen message indicating that the disk is full, and the unit has stopped recording. User must acknowledge the on-screen message by pressing the **Enter** button.
- The MDR will not record over previously recorded data. To continue recording, the data must be erased (or deleted). See **Disk Maintenance** on page 33 for details on how to do this.

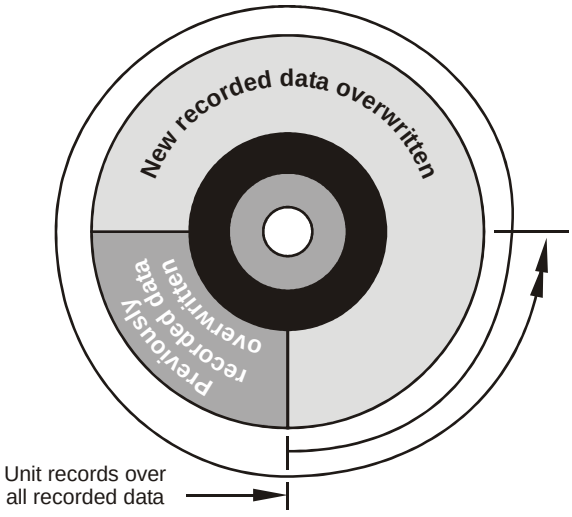


Write Once Mode

Write Once

When **Write Once** mode is selected, the MDR will function as follows:

- Recording always starts at end of last recording.
- The unit overwrites all previously recorded data.
- Recording stops before the unit overwrites any of the new recorded data (data from the current record session).
- When the end of the disk is reached, the unit displays an on-screen message indicating that the disk is full, and the unit has stopped recording. User must acknowledge the on-screen message by pressing the **Enter** button.
- The unit will continue recording again when the user presses the **Record** button.



Continuous Overwrite Mode

Continuous Overwrite Mode

When **Continuous Overwrite** mode is selected, the MDR will function as follows:

- Recording always starts at end of last recording.
- The unit overwrites all previously recorded data.
- The unit overwrites new recorded data (data from the current record session).
- Unit never stops recording.

RECORD

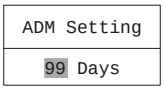
Disk Maintenance
In the **Disk Maintenance** sub-menu, use the **Jog** to move between the following options, pressing the **Enter** button to select one. The user can:

- **Delete** all data from the hard disk (with the possibility of restoring it).
- **Undelete** data that has been deleted, but not yet overwritten.
- **Destroy** all data on the hard disk permanently (removed with no possibility of restoring it).

Press the **Menu** button to leave the sub-menu without selecting an option.

Record Lock
Use this menu item to set the Record Lock feature. This feature disables the front panel **Record** button. Setting Record Lock to **ON** will start the unit recording if it is not currently in the Record mode.

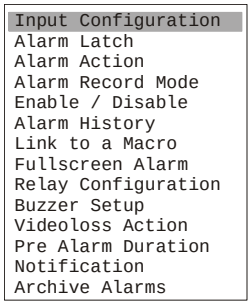
Use the **Jog** to select the required setting. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.



Auto Delete Mode
By selecting this menu item, the Auto Delete function can be set. Use the **Jog** to select a number of days (between **7** - **99**). Data older than the number of days selected will automatically be prevented from being displayed. Or select **OFF** if this function is not to be used. This feature may be required by law under the Data Protection Act.

To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

ALARMS

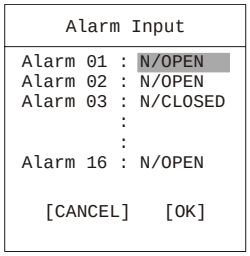


When the **Alarms** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can:

- Configure alarm inputs and outputs.
- Configure how the unit latches alarm conditions.
- Set up what action takes place when an alarm is triggered.
- Determine how the unit will record cameras in alarm.
- Enable and disable individual alarm inputs.
- View alarm histories.
- Link alarm inputs to macros.
- Configure the internal buzzer.
- Configure video loss alarms, archive alarms and alarm notifications.

△CAUTION

The primary function of the MDR is to furnish video multiplexing and recording with a multiscreen display. Although the unit has alarm handling and motion detection functions, these are considered secondary features. This unit should not be the only alarm device on site.



Input Configuration
When this menu item is selected, the **Alarm Input** dialog is displayed. Use it to configure each alarm input as either Normally-Open or Normally-Closed.

Use the **Jog** to move between inputs, setting the status for each one using the **Shuttle**. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

The different types of alarm Inputs should be configured as follows:

- **Normally Open Zero Potential Relay Contact**: Normally-Open.
- **Normally Closed Zero Potential Relay Contact**: Normally-Closed
- **TTL Active High**: Normally-Closed
- **TTL Active Low**: Normally-Open
- **Open Collector Active On**: Normally-Open
- **Open Collector Active Off**: Normally-Closed

```
Latched
Transparent
Timed Out
```

Alarm Latch
Select this menu item to determines how the unit latches alarm conditions. Use the **Jog** to select the required setting. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

The following settings are available:

- **Latched**: The alarm is activated until it is silenced and acknowledged by the user.
- **Transparent**: The alarm is active only while receiving alarm input. The alarm condition is cancelled when the alarm input ceases.
- **Timed Out**: The alarm condition is latched for the amount of time selected in this menu, then it is automatically silenced and acknowledged. If the alarm input exceeds the duration specified in this menu, the unit silences and acknowledges the alarm when the alarm input ceases. Select the timeout duration in the dialog that is displayed when **Timed Out** is selected. The range is from 1 to 250 seconds.

Note: Transparent alarms cannot be silenced and acknowledged. If transparent mode is preferred, but the ability to silence and acknowledge alarms is desired, select **Timed Out** and set the Alarm Timeout to two seconds.

Alarm Action
Select this menu item to display the **Alarm Action Setup** dialog. This dialog is used to specify what action is initiated when an alarm input is triggered.

```
      Alarm Action Setup

Input             : 01
Freeze            : Yes
Cameras           : 01 16 02 03
Presets           : 01 -- 09 --
Relay             : 1
Intrusion AND/OR  : OR
Aux Monitor       : B

        [CANCEL]   [OK]
```

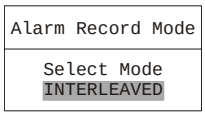
To configure the action for an alarm input, follow the steps below:

1. With the **Input** parameter highlighted, use the **Shuttle** to select the alarm input number that is to be configured.
2. Using the **Jog** to navigate, highlight the **Freeze** parameter.
3. Use the **Shuttle** to set the **Freeze** parameter to **Yes** or **No**. Selecting **Yes** will freeze the alarm camera display (quadrant 1) at the time the alarm is activated.
4. Use the **Jog** to navigate to the **Cameras** parameter.
5. Using the **Shuttle**, specify up to four cameras that will be displayed on-screen when the alarm is received. The camera group should contain the camera in alarm and three associated cameras.

   By default, the first camera in the list is the camera in alarm. The second camera is the camera that precedes the alarm camera numerically. The third and fourth cameras are the two cameras following the alarm camera numerically.

   The camera group selected here can also be used for Group Switching. The camera group is identified by the **Input** number (i.e., camera group selected for **Input** number 1 is identified as Camera Group 1). See page 27 for details.
6. Use the **Jog** to navigate to the **Presets** parameter.
7. Use the **Shuttle** to select preset positions that the specified cameras preset are to sent to when an alarm is activated. The preset number corresponds with the camera number located directly above it in this menu. Select from 1 through 16. If this field is left blank, the camera will not move to a preset position.

   In the example above, Camera 1 will go to Preset 1, while Camera 2 will go to Preset 9.
8. Use the **Jog** to navigate to the **Relay** parameter.
9. Using the **Shuttle**, configure which relay will be triggered when an alarm is activated. Select from **1**, **2**, **1 + 2** and **NONE**.
10. Use the **Jog** to navigate to the **Intrusion AND/OR** parameter.
11. Use this feature to activate alarms by hardwire alarm inputs AND/OR Intrusion detection. Use the **Shuttle** to select **AND** or **OR**. To use the feature, **Motion Detection** must be set to **Intrusion** and linked to this alarm number (see page 40).
12. Use the **Jog** to navigate to the **Aux Monitor** parameter.
13. Use the **Shuttle**, to designate on which auxiliary monitor the alarm is to be viewed. Select from **B**, **C**, **D** and **E**.
14. Repeat steps 1-13 to set parameters for further alarm inputs.
15. When configuration is complete, use the **Jog** to navigate to **[OK]**, then press the **Enter** button to complete the selection.



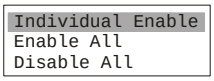
Alarm Record Mode

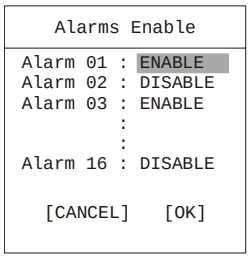
Use this menu item to determine how the unit will record cameras in alarm. Use the **Jog** to select the required mode. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

The following modes are available:

- **NO CHANGE**: Unit changes to the Alarm Record Rate, but it does not give priority to the camera in alarm.
- **EXCLUSIVE**: The unit records only cameras in alarm.
- **INTERLEAVED**: Alarmed cameras are recorded at a higher rate than non-alarm cameras. The unit accomplishes this by interleaving images of alarmed cameras between images from non-alarmed cameras in the record list. **Interleaved is the recommended mode of operation.**

Example of Alarm Record Modes	
No Change mode with 8 cameras, Camera 4 in alarm	1 2 3 **4** 5 6 7 8 1 2 3 **4** 5 6 7 8
Exclusive mode with 8 cameras, Camera 4 in alarm	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Interleaved mode with 8 cameras, Camera 4 in alarm	1 **4** 2 **4** 3 **4** 5 **4** 6 **4** 7 **4** 8 **4** 1 **4**



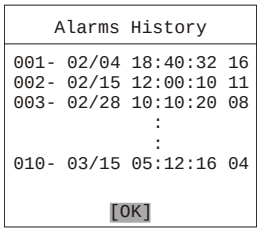


Enable / Disable

Use this menu item to enable or disable alarm inputs. In this menu, the user can select to:

- **Enable All**: Enable all alarm inputs.
- **Disable All**: Disable all alarm inputs.
- **Individual Enable**: Allow the user to access the **Alarm Enable** dialog, and enable or disable alarm inputs on a per camera basis. In this dialog, rotate the **Jog** to navigate between alarm inputs, using the **Shuttle** to enable or disable each input.

  To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

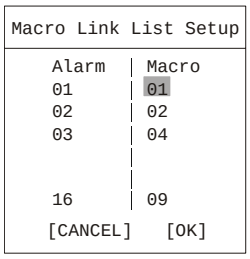


Alarm History

Select this menu item to view a list of the 100 most recent alarms. Alarms are displayed 10 at a time. Rotate the **Jog** to scroll through the alarms.

Each item in the list comprises the alarm number, the date of the alarm, the time of the alarm and the number of the camera input in alarm.

To leave the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button.

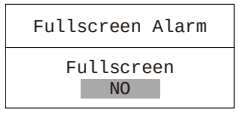


Link To A Macro

Select this menu item to link an alarm input to a macro. If a link is created, the selected macro will run each time that alarm is activated.

Rotate the **Jog** to highlight the required alarm input and use the **Shuttle** to select a macro to link to this input. Leave the macro value blank if an alarm input is to remain unlinked.

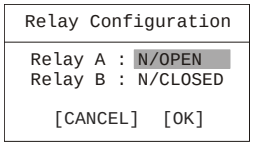
To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



Fullscreen Alarm

Use this menu item to select whether alarms should be displayed as a full screen display or a 4-way multiscreen display. Using the **Jog** to select **Yes** will cause the unit to always display the alarm camera full screen. Selecting **No** from this menu will cause the unit to display the 4-way display configured in the **Alarm Action Setup** menu (see page 34 for more details).

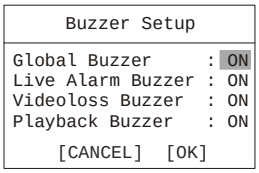
To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.



Relay Configuration

When this menu item is selected, the **Relay Configuration** dialog is displayed. Use this dialog to configure each relay output as either Normally-Open or Normally-Closed. Use the **Jog** to move between the two relays, setting the status for each one using the **Shuttle**.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



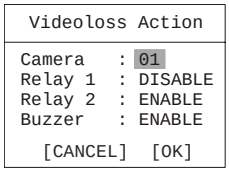
Buzzer Setup

When this menu item is selected, the **Buzzer Setup** dialog is displayed. Use this dialog to configure the internal buzzer. Use the **Jog** to move between the four options, using the **Shuttle** to turn each one **ON** or **OFF**.

The four options are:

- **Global Buzzer**: This setting acts as a master on/off switch. Setting this option to **OFF** deactivates all buzzer activity.
- **Live Alarm Buzzer**: Set this option to **ON** to activate the buzzer whenever the unit receives an alarm input.
- **Videoloss Buzzer**: Set this option to **ON** to activate the buzzer whenever video loss is detected. Disabling the videoloss buzzer disables all videoloss buzzer activity. Videoloss buzzers may also be disabled on a per camera basis in the **Videoloss Action** dialog (see below).
- **Playback Buzzer**: Set this option to **ON** to activate the buzzer during playback of recorded alarms.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



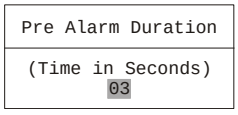
Videoloss Action

Select this menu item to configure how the unit responds to video loss from each individual camera.

With the **Camera** parameter highlighted, use the **Shuttle** to select the camera that is to be configured. Then using the **Jog** to navigate and the **Shuttle** to adjust the values, configure the following fields for the selected camera:

- **Relay 1**: If the relay is enabled, it will be activated when video loss is detected on this camera.
- **Relay 2**: If the relay is enabled, it will be activated when video loss is detected on this camera.
- **Buzzer**: Use this setting to disable the videoloss buzzer activation on a per camera basis. To disable videoloss buzzer activation on all cameras go to the **Buzzer Setup** menu, described above.

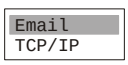
To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



Pre Alarm Duration

During recording, the unit stores up to 5 seconds of recorded information in a buffer. This data can be automatically retrieved when an alarm is activated. In this dialog, specify the amount of time just previous to the activation of an alarm you wish to retrieve.

Use the **Jog** to specify the number of seconds. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.



Notification

Use this sub-menu to set up:

- Email Notification
- TCP/IP Notification

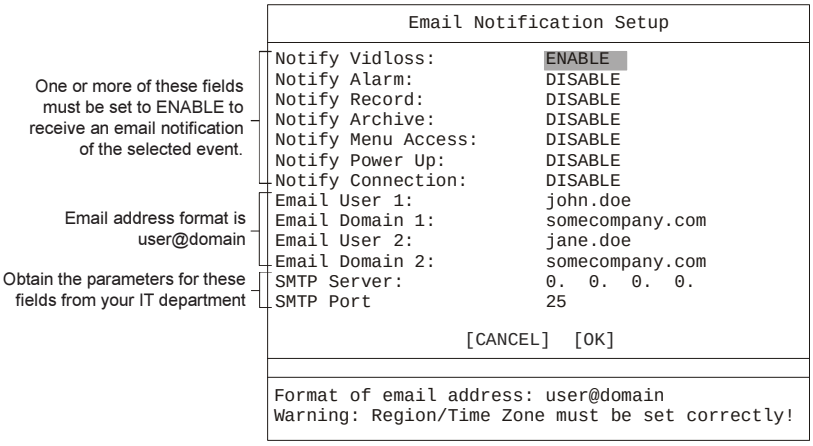
Email Notification

When the **Email** option is selected in the **Notification** sub-menu, the **Email Notification Setup** dialog is displayed. This dialog allows the user to setup the types of events to be notified of, and the email addresses (up to two) to be notified.

Use the **Jog** to navigate between fields. The **Notify..** and **SMTP..** parameters can be adjusted using the **Shuttle**. To configure the **Email..** parameters, follow the context sensitive on-screen instructions.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Note: The Region/Time Zone setting must be set correctly for Email notification to time stamp messages accurately. See page 26 for more details.

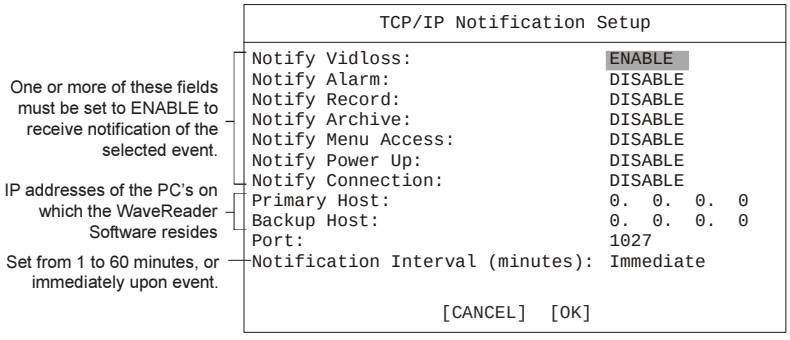


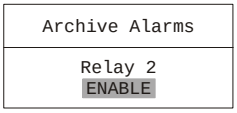
TCP/IP Notification

When the **TCP/IP** option is selected in the **Notification** sub-menu, the **TCP/IP Notification Setup** dialog is displayed. This dialog allows the user to setup the types of events to be notified of, and the IP addresses (up to two) of the PC's where the WaveReader software resides. Use the **Jog** to navigate between fields and the **Shuttle** to adjust values.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Note: WaveReader must be running on the receiving PC's and Alarm Monitoring must be setup. See Alarm Monitoring in the WaveReader Manual for details.

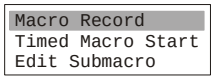




Archive Alarms

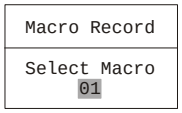
Select this menu item to display the **Archive Alarms** dialog. Selecting **ENABLE** in this menu item will cause the unit to activate relay 2 if a malfunction occurs while archiving.

Use the **Jog** to enable or disable this feature. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.



A macro is a recorded sequence of keystrokes. Each of the 16 available macros can have up to 32 keystrokes. When the **Macro** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can:

- Enter Macro Record mode.
- Program a scheduled start time for a macro.
- Edit the RS232 command string for each submacro.



Macro Record

Select this menu item to record a macro. **Do not attempt macro programming while the front panel is locked.**

To begin recording a macro:

1. Use the **Jog** to select the macro number you wish to record, then press the **Enter** button.

   The unit will automatically exit the menu system and go to a starting point. Macro Record mode is indicated as **F** and the **Macro Number** on-screen.
2. From this point, begin recording the desired keystroke sequence. Record up to 32 keystrokes. If 32 keystrokes are exceeded, the unit will end the macro recording automatically.
3. When programming is complete, press the **Function** button then the **Enter** button to end the macro recording.

Keystroke Count

While recording a macro, entering the menu system, changing multiple menu items, and exiting the menu system are only counted as one keystroke. Using the **Jog** to navigate the menu system does not count as a keystrokes. Once the menu system has been exited, re-entering the menu system will count as a second keystroke. Not all menu items can be programmed using macros.

Special Keys During Macro Recording

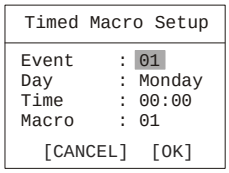
During macro recording, the following button combinations perform special functions:

- {F} + **1**: Activate Relay 1 output
- {F} + **2**: Reset Relay 1 output
- {F} + **3**: Pause macro for 1 second
- {F} + **4**: Pause macro for 5 seconds
- {F} + **5**: Activate Relay 2 output
- {F} + **6**: Reset Relay 2 output
- {F} + {F} + **Submacro number**: Program a specific submacro to activate when the macro is run
- {F} + **Enter** button: End macro recording

Macro Excluded Features

The following core features or settings cannot be programmed by macro:

- Disk Maintenance
- Erase Archive Medium
- POTS Setting
- Ethernet Setting
- RS485 Network Address
- Front Panel Lock/Unlock
- Record Timer



Timed Macro Start

Select this menu item to create scheduled events. Up to 20 scheduled events can be programmed in this menu.

With the **Event** parameter highlighted, use the **Shuttle** to select the event that is to be configured. Then using the **Jog** to navigate and the **Shuttle** to adjust the values, configure the following fields for the selected event:

- **Day**: Select the start day (**Monday** – **Sunday**) of the event. Select the ** option to run the event every day or select **None** to cancel the scheduled start time.
- **Time**: Specify the start time for the macro.
- **Macro**: Select the number of the macro that is to run during this event.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

MACRO

```
Submacro Edit
Select Submacro
      01
```

Edit Submacro

A submacro is an RS232 command string that is used to control a peripheral device. Submacros are activated during macros. See page 38 for information about programming a macro to activate a submacro.

In the **Submacro Edit** dialog, use the **Jog** to select the submacro you wish to edit and press the **Enter** button. This dialog will appear:

```
            Edit Submacro 01
080 066 066 037 --- --- --- --- --- ---
[P] [B] [B] [%]
               [CANCEL]  [OK]
ENTER key starts submacro edit
```

Use this dialog to create the RS232 command string. Press the **Enter** button to enter and exit the submacro edit mode. Rotate the **Shuttle** to navigate among the fields and use the **Jog** to change the values. Each byte value can be set from 0 to 255. To save the sub-macro, use the **Jog** to navigate to **[OK]** and press the **Enter** button.

{F}
1

Running A Macro

To activate a macro, press the **Function** button followed by the **Number** button of the desired macro. While running, the macro is indicated on-screen as the letter **F** and the macro number. The user can cancel the macro at any time by pressing the **Function** button.

{F}


Daylight Savings Time (Alternate Method)

A macro is provided for the adjustment of the time by one hour for daylight savings time. Press the **Function** button, then the **Sequence** button. If this function is activated during April, one hour is added to the time. If this function is activated in October, one hour is subtracted from the time. This function will only operate once per time period.

MOTION DETECTION

```
Enable/Disable Detection
Setup Parameters
Setup Active Zones
Indicate Detection
```

When the **Motion Detection** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can:

- Enable motion detection on a per camera basis.
- Activate individual zones in a scene to respond to motion detection.
- Activate the on-screen motion detection indicator.
- Set motion detection as Activity Detection or Intrusion Detection.
- Configure the motion detection parameters on a per camera basis.

```
Individual Enable
Enable All
Disable All
```

Enable/Disable Detection

Use this menu item to enable or disable motion detection on connected cameras. Use the **Jog** to select from the following:

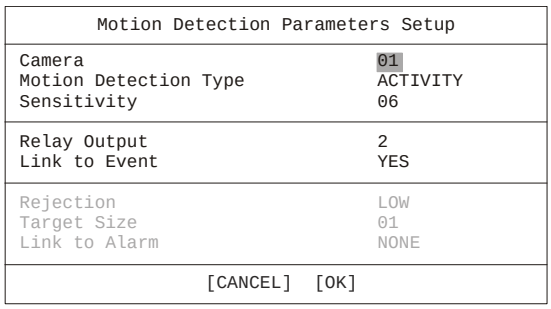
- **Enable All**: Enable motion detection on all cameras.
- **Disable All**: Disable motion detection on all cameras.
- **Individual Enable**: Allow the user to access the **Detection Enable** dialog, where motion detection can be enabled on a per camera basis. In this dialog, rotate the **Jog** to navigate between camera, using the **Shuttle** to enable or disable motion detection.

  To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

```
  Detection Enable
Camera 01: ENABLE
Camera 02: DISABLE
Camera 03: ENABLE
        :
        :
Camera 16: ENABLE
  [CANCEL]  [OK]
```

Setup Parameters

When this menu item is selected, the **Motion Detection Parameters Setup** dialog is displayed. Use this dialog to specify the motion detection settings for each individual camera.



To configure the motion detection settings for a camera, follow the steps below:

1. With the **Camera** parameter highlighted, use the **Shuttle** to select the camera number that is to be configured.
2. Using the **Jog** to navigate, highlight the **Motion Detection Type** parameter.
3. Use the **Shuttle** to select the type of motion detection to be used. There are two options:
   - **ACTIVITY**: Activity Detection is a simple type of motion detection, having only a sensitivity setting and a relay output.
   - **INTRUSION**: Intrusion Detection is a more sophisticated type of motion detection, with additional features such as false alarm rejection levels, minimum target size, and an alarm output.
4. Using the **Jog** to navigate, highlight the **Sensitivity** parameter.
5. Use the **Shuttle** to specify the motion detection sensitivity, 10 being the most sensitive.
6. The completion of the remaining parameters depends on the type of motion detection that has been selected.

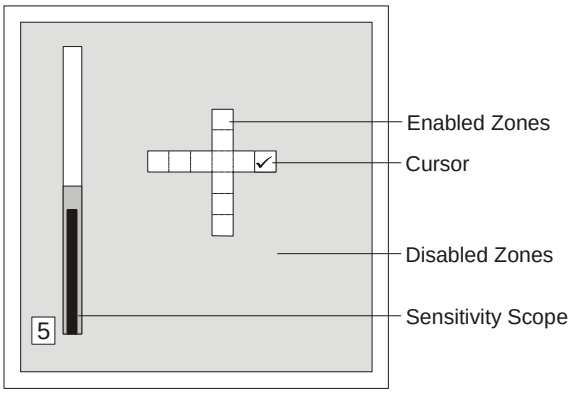
   If **ACTIVITY** has been selected, complete the following parameters:
   - **Relay Output**: The unit may be configured to activate a relay output when motion detection is present. Select either **1**, **2**, **1+2** (both relays) or **NONE**.
   - **Link to Event**: Selecting **YES** to activate the Event Record Rate when motion is detected. If **NO** is selected, the Activity Record Rate will be used when motion is detected.

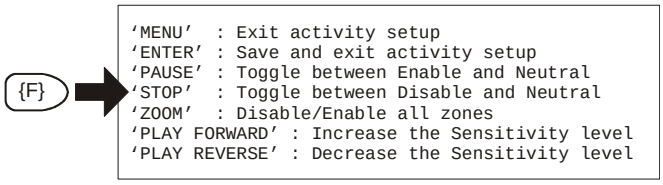
   If **INTRUSION** has been selected, complete the following parameters:
   - **Rejection**: Configure the false alarm rejection feature by selecting **LOW**, **MED**, or **HIGH**. These settings are based on the number of simultaneously triggered zones and the persistence of motion in a scene. The **LOW** setting is the most sensitive to motion. The **MED** setting will filter out most false alarm situations due to sudden luminance changes over the whole scene (e.g., clouds passing over). The **HIGH** setting will filter out sudden luminance changes as well as spurious motion events that do not persist for a number of frames (e.g., a bird flying past the lens).
   - **Target Size**: This setting is the minimum number of zones (from the 16 x 16 grid) that must be activated simultaneously before it is considered to be valid motion.
   - **Link To Alarm**: Select the alarm input number that is to be activated when motion is detected. Select **NONE** if no alarm is to be activated.
7. Repeat steps 1-6 to configure motion detection for further cameras.
8. When configuration is complete, use the **Jog** to navigate to **[OK]**, then press the **Enter** button to complete the selection.

Setup Active Zones

Use this menu item to setup the active zones for motion detection. When this menu item is selected, the menu will be removed from the screen and video from the currently selected camera will be displayed. A 16 x 16 grid is superimposed over the current video image, allowing for precise configuration of active zones. Currently disabled zones are tinted and currently enabled zones clear.

Ensure that the required camera is selected by pressing the **Number** button and then press the **Function** button to access a help screen that will overlay the current video image.





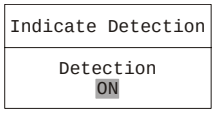
The **Stop** and **Pause** buttons are used to determine the action of the cursor, and it's current status can be seen by the way in which it is displayed. It has three possible modes NEUTRAL (blank square), ENABLE (square with a tick inside) and DISABLE (square with a cross inside). No Action will have no effect on the current cursor position; Enable will change the current cursor position to an active zone; Disable will change the current cursor position to a non-active zone.

By default, all zones are initially enabled. To disable a zone or series of zones, first use the **Jog** (up/down) and **Shuttle** (left/right) to navigate to the zone. Next, press the **Stop** button. Then use the **Jog/Shuttle** to move the cursor over the zones that are to be disabled. As the cursor leaves the zone, the zone will be tinted to indicate that the zone is now disabled. Using the cursor in this way, areas of the scene can be 'painted' with the cursor to become disabled zones. Enable disabled zones in the same way, using the **Pause** button.

Use the sensitivity scope to adjust the motion detection sensitivity for the scene. The sensitivity scope is the bar located near the left-hand corner of the screen. The black bar raises and lowers to indicate the degree of motion detected. When the black bar reaches the red bar, a motion detection alarm is activated.

Raise and lower the sensitivity level using the **Play Forward** and **Play Reverse** buttons. The red bar will move up and down accordingly and the sensitivity level is also displayed as a numeric value.

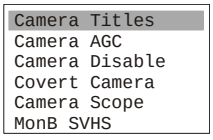
To end configuration and save changes, press the **Enter** button. To cancel changes, press the **Menu** button.



Indicate Detection

This menu item is used to specify whether motion detection is indicated on-screen by displaying the letter **M**.

Use the **Jog** to turn this feature on or off. To confirm the selection and exit the menu, press the **Enter** button. To exit the menu without making changes, press the **Menu** button.



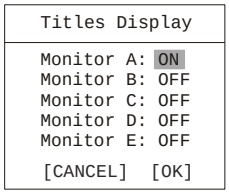
When the **Camera Setup** menu item is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, a user can:

- Edit the title for each camera.
- Adjust the Automatic Gain Control for each camera.
- Disable or enable individual camera inputs.
- Specify cameras as covert (recorded but not displayed).
- View the camera scope (histogram).
- Specify Monitor B to be a SVHS (Y/C) output.

Camera Titles

Select this item to display the **Camera Titles** sub-menu. From this sub-menu, the user can:

- Specify which monitors will display camera titles.
- Edit the title for each camera.



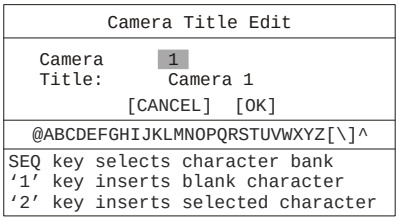
Titles Display

Use this menu item to specify which monitors will display camera titles. Rotate the **Jog** to navigate between monitors, using the **Shuttle** to turn camera titles on or off on each monitor.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

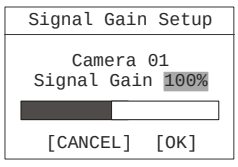
Edit Titles

When this menu item is selected, the **Camera Title Edit** dialog is displayed. Use this dialog to edit individual camera titles.



To edit camera titles, follow the steps below:

1. With the **Camera** parameter highlighted, use the **Shuttle** to select which number of the camera whose title is to be configured.
2. When the required camera number is displayed, press the **Enter** button. Edit mode will be activated and the character bank appears in the centre of the menu.
3. Press the **Sequence** button to select the desired character bank.
4. Once the desired character bank is selected, rotate the **Shuttle** to navigate to the character in the camera title that is to be changed.
5. Rotate the **Jog** to navigate the cursor in the character bank to the character that is required.
6. Press the **Number 1** button to insert a blank character or press the **Number 2** button to insert the selected character.
7. Repeat steps 3-6 to assemble the required title.
8 When the title is as desired, press the **Enter** button to exit the edit mode.
9. Repeat steps 1-8 to configure further camera titles.
10. When configuration is complete, use the **Jog** to navigate to **[OK]**, then press the **Enter** button to complete the selection.

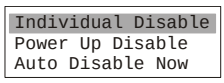


Camera AGC

Use the Automatic Gain Control (AGC) menu item to adjust the video input signal level for cameras whose level is outside the normal range. The default gain setting is 100%.

Use the **Shuttle** to select the camera that is to be configured, and then use the **Jog** to navigate to the **Signal Gain** parameter. Use the **Shuttle** to adjust the signal gain for this camera.

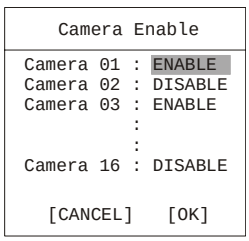
To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



Camera Disable

Select this menu item to display the **Camera Disable** sub-menu. From this sub-menu, the user can:

- Enable or disable cameras individually.
- Configure the unit to disable cameras automatically at power-up if video loss is detected.
- Automatically disable all inputs detecting videoloss.

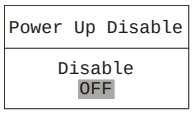


Individual Disable

Use this dialog to disable or enable each camera input individually.

In this dialog, rotate the **Jog** to navigate between cameras, using the **Shuttle** to enable or disable each camera input.

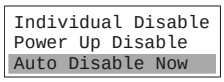
To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.



Power Up Disable

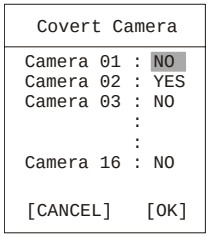
Use this menu item to enable or disable the Power Up Disable feature. With this feature turned on, the unit will automatically detect which inputs are experiencing video loss at power-up, and disable them.

Use the **Jog** to turn this feature on or off. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.



Auto Disable Now

When this feature is selected, the unit detects which inputs have video signals and which are experiencing video loss. The unit will automatically disable the inputs experiencing video loss. The MDR will also re-enable video inputs that were previously disabled if a video input signal is detected.



Covert Camera

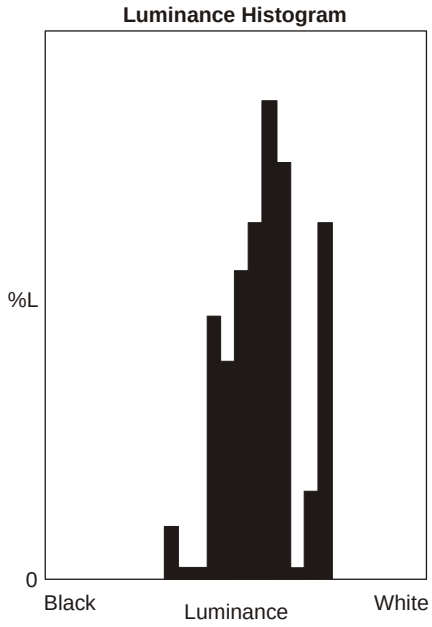
When this menu item is selected, the **Covert Camera** dialog is displayed. This feature enables the user to remove cameras from all live displays while continuing to record them, so that the other users and the public are unaware that the camera is being recorded. Covert cameras are viewable during playback.

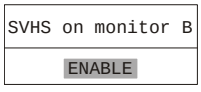
In this dialog, rotate the **Jog** to navigate between cameras, using the **Shuttle** to select whether each camera should be configured as covert. Select **YES** to configure a camera as covert.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Camera Scope

Use this menu item to view a live luminance histogram of the camera inputs. A luminance histogram is a graphical representation of how many times each grey-level value occurs in an image. Use this feature to analyse and optimise the video input signal. Use the **Number** buttons to move between the individual camera inputs.



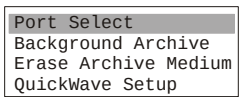


MonB SVHS

This menu item is used to specify whether the connection used on Monitor B is SVHS (Y/C).

If Monitor B is using a SVHS connection, use the **Jog** to select **ENABLE**. If the monitor is using a composite connection, set the parameter to **Disable.** To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

ARCHIVE SETUP

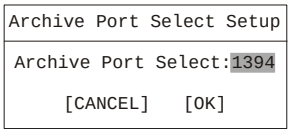


When the **Archive Setup** menu item is selected from the **Main** menu, a sub-menu is displayed. This sub-menu is used to set options regarding the archiving of recorded data to an external archive device. The user can:

- Select the port where the archive device will be connected.
- Turn Background Archiving mode on and off.
- Erase the recorded data on a compatible archive device.
- Enable or disable QuickWave Setup.

Port Select

Use this menu item to select the port or interface to which the archive device will be connected. Use the **Shuttle** to select **SCSI** if a SCSI device has been connected via the SCSI port or select **1394** if a 1394 Firewire archive device has been connected via the IEEE 1394 Firewire port.

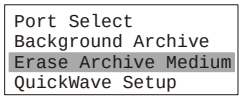


To save and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without saving, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Background Archive

Use this menu item to activate background archiving. Background archiving is where the unit records data to both the hard disk and the archive device simultaneously. Use the **Jog** to select **ON** or **OFF**.

To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

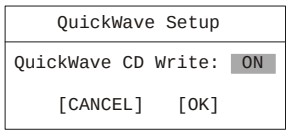


Erase Archive Medium

Use this menu item to erase all of the recorded data on an archive device. With **Erase Archive Medium** highlighted, press the **Enter** button. If a compatible archive device is connected, a confirmation message will appear, otherwise no action will occur.

QuickWave Setup

This menu item provides the option of having the QuickWave software written to any CDs that are created. This allows the CD to be read on any PC without installing software. To enable this feature, use the **Shuttle** to select **ON**.



To save and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without saving, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

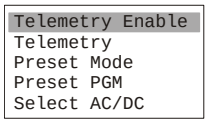
AUDIO SETUP

Selecting the **Audio Setup** menu item from the **Main** menu will display a sub-menu from which audio recording can be turned on or off. If audio recording is to be enabled, the compression rate will be G.711 (64kb/s).

Use the Jog to select **G.711** or **OFF**. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

Audio Limitations:

- To record audio at least one of the unit's video inputs must be set to record video at a rate of 1pps or faster.
- If all the cameras are set to EVENT mode (see page 29) and no events are occurring, no audio will be recorded regardless of the event recording speed.

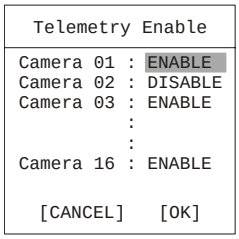


When the **Telemetry** menu item is selected from the **Main** menu, a sub-menu is displayed. This sub-menu is used to set options regarding any telemetry receivers that are fitted to the cameras. The user can:

- Enable or disable telemetry on a camera by camera basis.
- Select between standard and alternate telemetry signals.
- Select the preset mode, standard or enhanced.
- Enable or disable the Preset Program Mode.
- Specify whether telemetry receivers connected to cameras are AC or DC models.

△CAUTION

The MDR supports Baxall UTC (Up-The-Coax) telemetry, but telemetry commands can not be sent using the buttons on the front panel of the unit. Telemetry commands can only be sent by connecting a compatible keyboard to the MDR (e.g., Baxall ZKX2, ZKX3 and ZKX7 keyboards). Consult the relevant keyboard manual for more details.



Telemetry Enable

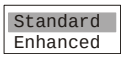
Select this menu item to enable or disable telemetry on individual cameras. Rotate the **Jog** to navigate between cameras, using the **Shuttle** to select whether telemetry on each camera should be enabled or disabled.

To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

Telemetry

Select this menu item to change the type of telemetry signal. Use the **Jog** to select between **Standard** (old/asynchronous i.e. not synchronised to the video signal) or **Alternate** (new/ synchronous i.e. synchronised to the video signal). To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

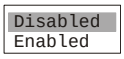
It should be noted that standard telemetry may interfere with some on screen displays. If this happens try using Alternate telemetry. Alternate telemetry only works on Baxall ZR-mini receivers. Changing the telemetry type is a global function which changes all the telemetry outputs. The default setting is **Alternate**.



Preset Mode

This menu item allows the user to change the mode used for setting preset positions. Use the **Jog** to select between **Standard** or **Enhanced** mode. The default setting is **Enhanced**.

To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.



Preset PGM

This menu item is used to enable or disable preset positions program. Use the **Jog** to highlight the required setting and press the **Enter** button to confirm the selection. To exit the sub-menu without making changes, press the **Menu** button.

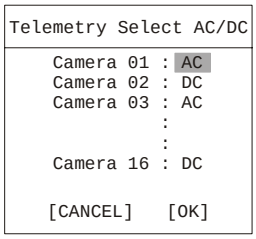
Once the preset positions program has been enabled, you must then exit the menu system and use a connected keyboard to set the camera preset positions by carrying out the appropriate procedure. The procedure depends upon whether **Standard** mode or **Enhanced** mode was selected for the **Preset Mode**. The procedures are given overleaf.

Standard Mode Procedure

1. Press the TELEMETRY key, then press the FUNCTION key.
2. Press the PRESET key.
3. Pan and tilt the camera to the required position.
4. To store the position, press the IRIS key.
5. To advance to the next preset, press the LAMPS key.
6. Repeat the above steps for each preset, or switch camera power off to exit.
7. Exit Telemetry mode.
8. Select the Telemetry menu and disable the Preset PGM option.

Enhanced Mode Procedure

1. Press the TELEMETRY key.
2. Pan and tilt the camera to the required position.
3. Press the FUNCTION key.
4. Press the PRESET key.
5. Press the required CAMERA key (1 - 8) to store the preset.
6. Position and store the next preset as above.
7. When all the presets have been stored, exit Telemetry mode.
8. Select the Telemetry menu and disable the Preset PGM option.



Select AC/DC

This menu item allows the user to change the type of telemetry data in order to match a particular receiver type. The **DC** setting is suitable for proportionately controlled receivers. The **AC** setting is suitable for non-proportionately controlled receivers. The default setting is **AC**.

Rotate the **Jog** to navigate between cameras, using the **Shuttle** to select the telemetry type on each camera. To save the changes and exit the dialog, use the **Jog** to select **[OK]**, then press the **Enter** button. To exit the dialog without making changes, use the **Jog** to select **[CANCEL]**, then press the **Enter** button.

RS232
RS485
Ethernet

When the **Communications** menu option is selected from the **Main** menu, a sub-menu is displayed. From this sub-menu, the user can:

- Configure the baud rates and settings for the RS232 ports.
- Configure the network address for the RS485 network.
- Configure the Ethernet address and networks settings.

Port 1
Port 2

RS232
Use this menu item to select which RS232 port is to be configured. Use the **Jog** to highlight the required port and press the **Enter** button.

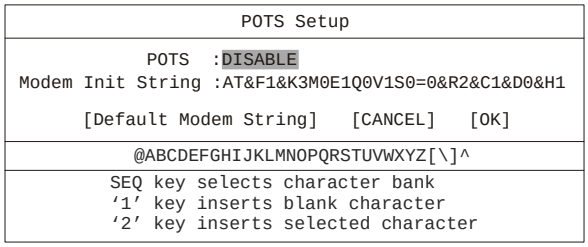
POTS Setup
Baud Rate

Port 1
Use the items in this sub-menu to configure RS232 Port 1. It is possible to:

- Enable and disable POTS and configure the Modem initialization string (POTS Setup).
- Adjust the baud rate.

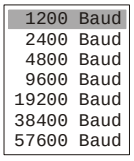
POTS Setup
When this menu item is selected, the **POTS Setup** dialog is displayed. The user can enable or disable POTS and configure the Modem initialisation string.

The default modem string (shown below) is for use with Hayes Accura 56k, Diamond Supra Express 56k, and 5686 US Robotics modems in their default conditions. Consult with the modem manual before attempting to make any changes. **It is strongly recommended that the modem initialization string only be modified by a qualified technician.**



To configure the POTS setup, follow the steps below:

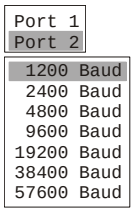
1. With the **POTS** parameter highlighted, use the **Shuttle** to enable or disable POTS.
2. If POTS is enabled, it may be necessary to configure the modem initialisation string. With the **Modem Init String** parameter highlighted, press the **Enter** button to enter Edit mode. The character bank will appear in the centre of the menu.
3. Press the **Sequence** button to select the desired character bank.
4. Once the desired character bank is selected, rotate the **Shuttle** to navigate to the character in the string that is to be changed.
5. Rotate the **Jog** to navigate the cursor in the character bank to the character that is required.
6. Press the **Number 1** button to insert a blank character or press the **Number 2** button to insert the selected character.
7. Repeat steps 3-6 to assemble the required string.
8 When the string is as desired, press the **Enter** button to exit Edit mode..
9. When configuration is complete, use the **Jog** to navigate to **[OK]**, then press the **Enter** button. The changes will be saved and the unit will reboot. To exit the dialog without making changes, select **Cancel**, then press the **Enter** button. Pressing the **Menu** button also exits the dialog without making changes.



Baud Rate

Use this menu item to configure the baud rate for Port 1.

Use the **Jog** to select the required baud rate. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

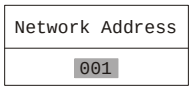


Port 2

When the **Port 2** menu item is selected, a sub-menu is displayed where the baud rate for RS232 Port 2 can be configured.

Use the **Jog** to select the required baud rate. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

The RS232 port 2 is used for Event Generation and ASCII Text Insertion. See page 68 for the RS232 protocol required to perform these functions.



RS485

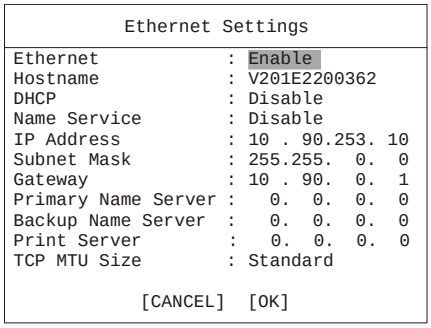
Up to 32 units (any combination of multiplexers and keyboards) can be connected together in a RS485 network. In such instances, the MDR unit must be given a network address.

Use the **Jog** to select the unit's unique network address. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

Ethernet Settings

An Ethernet session is an active network connection between a PC and the unit, with the user viewing live camera images or accessing data stored on the hard disk.

When this menu item is first selected, a message appears to warn the user that the machine may restart if any values change. To continue, Select **OK**. The **Ethernet Settings** dialog is displayed, and this dialog is used to adjust the Ethernet settings for the network.



If **Ethernet** is enabled but **DHCP** and **Name Service** are disabled, the user can set the **IP Address**, **Subnet Mask** and **Gateway** manually.

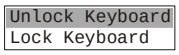
If the unit is connected to a DHCP server, the user should enable both **Ethernet** and **DHCP**. The unit will obtain all the required IP information automatically from the DHCP server. Unless the unit is turned off for three days or more, the unit will always receive the same IP details.

If the unit is connected to a WINS server, the user should enable **Ethernet** and set the **Name Service** parameter to **WINS**. The user must specify the address of the **Primary Name Server** and **Backup Name Server**, and can also specify the other **IP Address**, **Subnet Mask** and **Gateway** manually. The unit will register its hostname at the specified name server, and this hostname can then be used for ping (e.g., ping V2019230424) and web access (http://V2019230424).

For all options the user can set an IP address for a **Print Server** and the **MTU Size**. **MTU Size** (Standard, 1200 or 1400) is the maximum data packet size that the unit will transmit onto a network. The **Standard** setting (1500) is optimal for most ethernet network environments.

Use the **Jog** to navigate to the desired setting, then use the **Shuttle** to adjust the value. Consult with your local MIS personnel before making Ethernet setting changes. To confirm selections and exit the dialog, use the **Jog** to navigate to **[OK]**, then press the **Enter** button. To exit the dialog without making changes, select **Cancel**, then press the **Enter** button. Pressing the **Menu** button also exits the dialog without making changes.

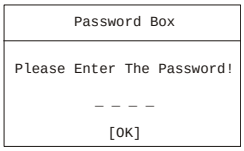
FRONT PANEL LOCK



When the **Front Panel Lock** menu item is selected from the **Main** menu, a sub-menu is displayed. Use this sub-menu to lock the front panel keypad. While locked, the only operational key on the front panel is the **Menu** button. To unlock the front panel, a user must enter the Installer password and return to this menu.

Use the **Jog** to select the required item. To confirm the selection and exit the sub-menu, press the **Enter** button. To exit the sub-menu without making changes, press the **Menu** button.

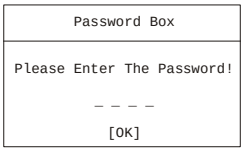
FACTORY SETTINGS



Return To Factory Defaults

From the **Main** menu, use the **Jog** to select **Factory Settings** and press the **Enter** button. A password box will appear. Using the **Number** buttons, enter the Factory Defaults password (8 1 1). Use the **Jog** to select **OK**, then press the **Enter** button.

The unit will reboot, returning all settings (except the time and date) to the factory defaults. Due to the large size of the hard disk, the reboot may take several minutes.

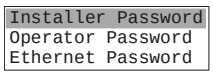


Change Language

From the **Main** menu, use the **Jog** to select **Factory Settings** and press the **Enter** button. A password box will appear. Using the **Number** buttons, enter the Language password (1 2 3). Use the **Jog** to select **OK**, then press the **Enter** button.

A dialog will appear displaying the available language selections. Rotate the **Jog** to select the desired language. To confirm the selection and exit the dialog, press the **Enter** button. To exit the dialog without making changes, press the **Menu** button.

PASSWORDS

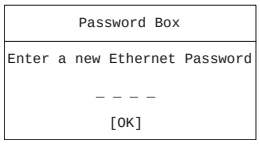


When the **Passwords** menu item is selected from the **Main** menu, a sub-menu is displayed. Use this sub-menu to change the Installer and Operator passwords, and to activate or deactivate the Ethernet password.

Changing the Installer or Operator Passwords

To change a password:

1. Highlight the password you wish to change, then press the **Enter** button. A password box will appear.
2. Enter the new password using the **Camer Number** buttons.
3. Use the **Jog** to highlight **OK**, then press the **Enter** button. A second password box appears.
4. Re-enter the password.
5. Highlight **OK**, then press the **Enter** button. A confirmation message is displayed indicating if the password was entered correctly and changed.



The Ethernet Password

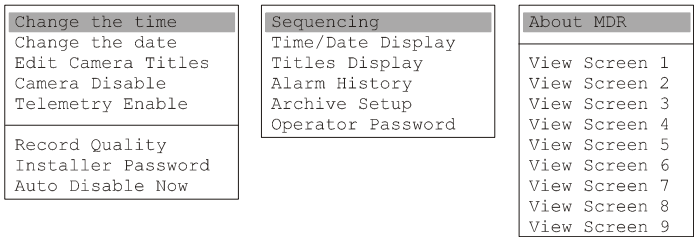
The Ethernet Password feature limits access to only those users who access the unit using the password feature of WaveReader versions 2.3 or later. When the unit is first setup, the default is **No Password Protection**. This means that anyone using WaveReader and accessing with an ethernet connection can connect to the unit.

To activate the Ethernet Password, follow the steps below:

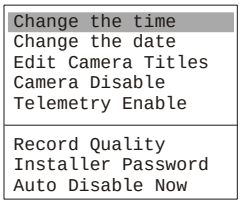
1. Use the **Jog** to highlight the **Ethernet Password** option and press the **Enter** button. A password box will appear.
2. Enter the new password using the **Number** buttons.
3. Use the **Jog** to highlight **OK**, then press the **Enter** button. A second password box appears.
4. Re-enter the password.
5. Highlight **OK**, then press the **Enter** button. A confirmation message is displayed indicating if the password was entered correctly and changed.

To return the unit to No Ethernet Password Protection, enter the Ethernet Access Reset Password (1 1 1) in the password box shown above.

THE QUICKINSTALL, OPERATOR AND SYSTEMVIEW MENUS



THE QUICKINSTALL MENU

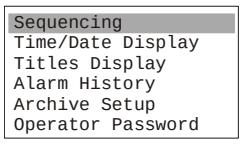


After installation is complete, it is strongly recommended that, as a minimum, the items in the **QuickInstall** menu be configured before the unit is used. All items located in the **QuickInstall** menu are also found in the **Main** menu. These items are provided in the separate **QuickInstall** menu as a convenience for the installer.

Use the following table to find detailed information about configuring specific items from the **QuickInstall** menu.

QuickInstall Menu Item	Main Menu Location	Page In Manual
Change the Time	Main Menu → Time/Date → Set Time	25
Change the Date	Main Menu → Time/Date → Set Date	25
Edit Camera Titles	Main Menu → Camera Setup → Camera Titles → Edit Titles	42
Camera Disable	Main Menu → Camera Setup → Camera Disable	42
Telemetry Enable	Main Menu → Telemetry → Telemetry Enable	45
Record Quality	Main Menu → Record → Record Quality	29
Installer Password	Main Menu → Passwords → Installer Password	49
Auto Disable Now	Main Menu → Camera Setup → Camera Disable → Auto Disable Now	42

THE OPERATOR MENU

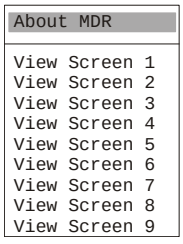


The **Operator** menu is provided so that the user has access to a limited number of menu items. These menu items are primarily monitor display setup options, so that the user may personalize the monitor displays during their shifts. Other options include video archive setup and changing the Operator password.

None of the items are unique to the **Operator** menu. All items located in the **Operator** menu are also found in the **Main** menu. Use the following table to find detailed information about configuring specific items from the **Operator** menu.

Operator Menu Item	Main Menu Location	Page In Manual
Sequencing	Main Menu → Sequencing	27
Time/Date Display	Main Menu → Time/Date → Time/Date Display	25
Titles Display	Main Menu → Camera Setup → Camera Titles → Title Display	42
Alarm History	Main Menu → Alarms → Alarm History	35
Archive Setup	Main Menu → Archive Setup	44
Operator Password	Main Menu → Passwords → Operator Password	49

THE SYSTEMVIEW MENU



The **SystemView** menu is provided so that users may quickly view global software and hardware settings.

The **About MDR** menu item provides information such as Model Designation, Serial Number, Hostname, Software Version, Software Date, Boot Code Version, Hard Disk Size, IP Address, Hardware Address (MAC) and DHCP Lease Expiration Date.

The **View Screen** menu items provide an overview of the units current operating parameters and the currently selected menu settings. An overview of each of the view screens is described on the following pages. The default values are **bolded** and *italicized.*

View Screen 1

Alarm Input
Enable/Disable: ***1 = Enabled***, 0 = Disabled
Normally Open or Normally Closed: ***0 = Open***, C = Closed
Macro: Macro number if activated.
Alarm Action
Freeze: ***1 = Freeze***, 0 = No Freeze
Cameras: Primary camera in alarm and three associated cameras.
Relay: ***1***, 2, 1+2, or None.
Intrusion AND/OR: AND, ***OR***

View Screen 2

Camera
Enable/Disable: ***1 = Enabled***, 0 = Disabled
Signal Gain: AGC setting from 1 through 100. ***50***
Covert Camera: Yes or ***No***
Camera Title: ***Camera x***, x=number
Videoloss Action
Relay 1: 1 = Enabled, ***0 = Disabled***
Relay 2: 1 = Enabled, ***0 = Disabled***
Buzzer: 1 = Enabled, ***0 = Disabled***

View Screen 3

Motion Detection
Enable/Disable: ***1 = Enabled***, 0 = Disabled
Activity or Intrusion Detection: I = Intrusion, ***A = Activity***
Sensitivity: 1 through 10, ***5***
Relay Output: ***None***, 1, 2, 1+2
Link to Event: ***Yes*** or No
Rejection Ratio: High, Medium, or Low
Target Size: 1 through 256
Alarm Camera: 1 through 4, 10 or 16

View Screen 4

Record Rate
Event Camera Settings: T = Timelapse, E = Event, ***ET = Event and Timelapse***
Timelapse Record Rate: In pictures per second (pps). ***30***
Event Record Rate: In pictures per second (pps). ***1***
Pre Event Duration: 0 to 5 seconds. ***2***
Post Event Duration: 0 to 200 seconds. ***0***
Activity Record Rate: In pictures per second (pps). ***2***
Record Quality: ***High***, Medium, or Standard.
Event Associated Cameras: Up to 3.

View Screen 5

Record Timer
DAY: 1-31, Mon, Tue, Wed, Thu, Fri, Sat, Sun, Mon-Fri, Sat-Sun, Mon-Sun
Start: Time (HH:MM)
Stop: Time (HH:MM)
Macro: Macro Number
On/Off: On or ***Off***

View Screen 6
Time and Date Display A: ***On*** or Off.
Time and Date Display B: ***On*** or Off.
Time Format: 12 or ***24 hour***
Date Format: ***MM/DD/YY***, DD/MM/YY, or YY/MM/DD
Master Clock: Yes or No.
Multiscreen Dwell: In seconds. ***003***
Full Screen Dwell: In seconds. ***003***
Titles Display A: ***On*** or Off.
Titles Display B: ***On*** or Off.

View Screen 7
Record Mode: No Overwrite, Write Once, or ***Continuous***.
Indicate Detection: On or ***Off***.
Global Buzzer: On or ***Off***.
Live Alarm Buzzer: On or ***Off***.
Video Loss Buzzer: On or ***Off***.
Playback Buzzer: On or ***Off***.
Relay 1: ***Normally Open*** or Normally Closed.
Relay 2: ***Normally Open*** or Normally Closed.
Alarm Latch: ***T = Transparent***, L = Latched, TO (020) = Timed Out (Time)
Alarm Record Mode: ***Interleaved***, Exclusive, or No Change.
Full Screen Alarm: Yes or ***No***.
Global Alarm Record Rate: In pictures per second (pps). ***30***
Pre Alarm Duration: In seconds. ***001***
Archive Alarm: ***Enable*** or Disable.

View Screen 8
Auto Disable: On or ***Off***.
Background Archive: On or ***Off***.
Monitor Setup: ***Single*** or Dual.
Baud Rate Port 1: 1200,1400, 4800, 9600, 19200, 38400, and ***57600***.
Baud Rate Port 2: 1200,1400, 4800, 9600, ***19200***, 38400, and 57600.
Network Address: 001-005. ***001***
Ethernet: ***Enable*** or Disable.
POTS: Enable or ***Disable***.
Language: ***English***, German, or French.
Keyboard Lock: On or ***Off***.
Record Lock: On or ***Off***.
Regional Settings: ***Off***, USA, EUR, and AUS.
Time Zone: ***GMT+00:00***
QuickWave CD Write: ***On*** or Off.

View Screen 9
NTP Update Interval: Enable or ***Disable***.
NTP Primary Server: ***3. 37. 8. 26***
NTP Backup Server: ***0. 0. 0. 0***
Subnet Mask: ***255.255.254. 0***
Gateway: ***3. 18.172. 1***
DHCP: Enable or ***Disable***.
Name Service: ***WINS*** or Disable.
Primary Name Server: ***3. 18.173. 12***
Backup Name Server: ***3. 18.173. 13***
Print Server: ***3. 18.173. 11***
TCP MTU Size: ***Standard***, 1200, and 1400.

ALARMS

ALARM INPUT

Alarm devices are connected via the Alarm PCB on the back panel of the unit (see page 10). Each alarm input corresponds with the camera Input of the same number. However, alarm input to camera number assignments can be changed on in the **Alarm Action Setup** dialog (see page 34).

ALARM OUTPUT

Front Panel Alarm LED: The left-hand LED above the **Alarm** button is lit for the duration of the alarm.

Internal Buzzer: The internal buzzer is activated and will stay active until the alarm is silenced and acknowledged. This feature can be turned off in the menu system (see page 36).

Monitor Displays: Discussed in the **On-screen Displays During Alarms** section below.

Output Relays: The alarm output relays are active for the duration of the alarm. This feature is configured in the menu system (see **Alarm Action Setup** and **Relay Configuration** on pages 34 and 36 respectively) and can be deactivated.

Macro Activation: The unit can be configured in the menu system to activate a macro when an alarm is detected.

Preset PTZ Camera commands: The unit can be configured in the menu system to send preset commands to specific cameras when an alarm is detected.

Record Rate: The record rate can be increased by recording at the Alarm Record Rate (see page 31) and by **Interleaved** or **Exclusive** recording (see **Alarm Record Mode** on page 35).

ALARM ACKNOWLEDGE

Pressing the **Alarm** button acknowledges that the alarm has been recognized and silences the internal buzzer. This does not clear the alarm condition.

ON-SCREEN DISPLAYS DURING ALARMS

Monitor A in Live Multiscreen Mode

Single Alarm: When a single alarm is received, the unit changes to 4-way display. By default this display will contain the camera in alarm (i.e., if alarm input 3 is activated, camera number 3 will be displayed), and three associated cameras. These cameras can be defined as a group in the menu system (see **Alarm Action Setup** on page 34). The top left cameo displays the camera in alarm.

Second Alarm: When a second alarm is received, the unit changes to a 10-way multiscreen, displaying the alarm cameras in the top two cameos. The associated cameras are displayed in the remaining cameos.

Third Alarm: When a third alarm is received, the unit changes to a 9-way multiscreen, displaying the alarm cameras in the top three cameos. The associated cameras are displayed in the remaining cameos.

If more that three alarms are active simultaneously, the unit switches to the maximum 16-way multiscreen display.

Other display options include:

- A full screen display of a single camera in alarm, with a sequenced full screen display for additional cameras in alarm. This option is selectable in the menu system (see **Fullscreen Alarm** on page 35).
- Freeze camera display at the time the alarm was received.

Monitor B Display During Alarm

If a single alarm is activated, the unit switches to a full screen display of the camera in alarm. If further alarms are activated, the unit switches to a sequenced display of all cameras in alarm.

ON-SCREEN DISPLAYS DURING ALARMS

Full Screen Displays on Monitors B through E During Alarms

If group switching is disabled, the monitor (B through E) designated as **Aux Monitor** for the activated alarm (see page 34) switches to a full screen display of the camera in alarm. The other monitors continue to display their current cameras and not change due to alarm.

If multiple alarms are active, the designated **Aux Monitor** sequences among the alarm cameras at a fixed 1 second dwell.. Monitors B through E cannot freeze images on alarm.

If group switching is enabled, the **Aux Monitor** setting has no effect. When an alarm is activated, Monitors B through E switch to a full screen display of the camera group selected in the **Cameras** parameter for that particular alarm input in the **Alarm Action Setup** dialog. For example, if alarm input 1 is activated, Group 1 cameras display on Monitors B through E.

If multiple alarms are active, Monitors B through E sequence between the alarm camera groups at a fixed 1 second dwell. Monitors B through E cannot freeze images on alarm.

Notes: The Monitors B through E screens do not revert to original fixed displays after the alarm is cleared. They continue to display the last alarm camera. But, if sequencing was active on Monitors B through E before the alarm, then Monitors B through E continue to sequence after the alarm is cleared.
If the user changes the screen format while an alarm is active, then the unit continues to display the selection after the alarm clears. It does not revert to the pre alarm screen display.

Full Screen Alarm

If the programmer does not install Monitors B through E and relies solely on Monitor A for all system information, a full screen alarm display on Monitor A may be preferred to the custom multiscreen displays.

In this case, the user can enable the **Fullscreen Alarm** option (see page 35) that makes Monitor A:

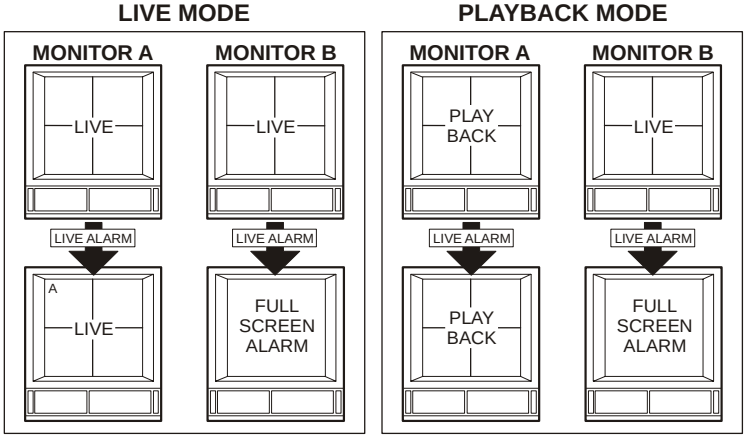
- Switch to a full screen display of the camera in alarm.
- Sequence full screen between multiple alarms (as Monitors B through E normally do).

Even if the **Freeze** option was selected in the **Alarm Action Setup** dialog, a single full screen alarm can not be frozen.

ALARM OPERATIONS DURING PLAYBACK

Live Alarms Displays

If a single alarm is activated, the unit switches to a full screen display of the camera in alarm on Monitor B. If additional alarms are activated, the unit switches to a sequenced display of all cameras in alarm on Monitor B.



Recorded Alarms

Front Panel Alarm LED: The left-hand LED above the **Alarm** button is lit for the duration of the alarm.

Internal Buzzer: During playback, the internal buzzer is activated and will stay active until it is silenced and acknowledged. This feature can be turned off in the menu system (see page 36).

Monitor A Multiscreen: Each camera in alarm is indicated on-screen by a flashing red "**A"** in its cameo. The Alarm LED will also light to indicate an alarm condition. There is no change in the playback multiscreen based on playback of recorded alarms.

ALARM HISTORY BOX

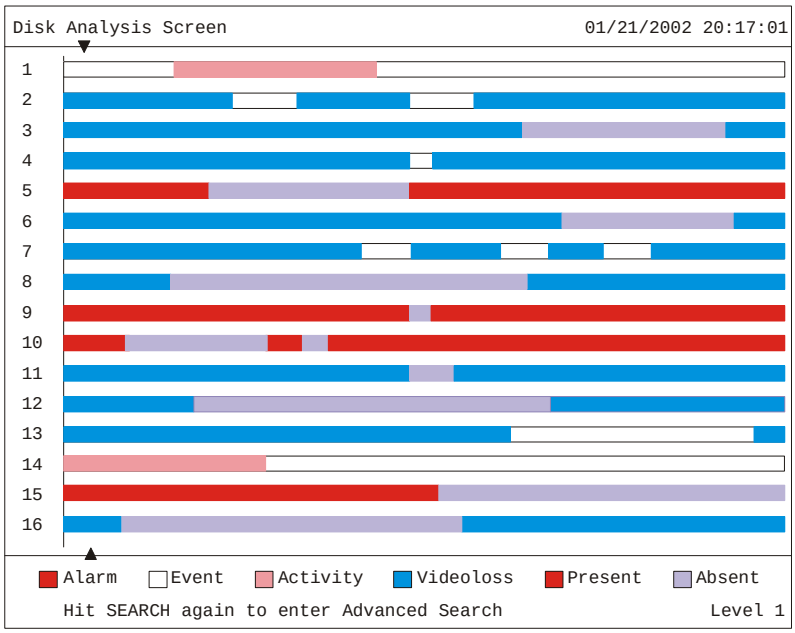
The Alarm History feature provides a list of the 100 most recent alarms. View the **Alarm History** dialog by accessing the menu system, and selecting **Operator** → **Alarm History**. The **Alarm History** dialog can also be found under **Main Menu** → **Alarms** → **Alarm History**. For more details, see page 35.

SEARCHING

DISK ANALYSIS SCREEN

The MDR provides a powerful search interface to access video files stored on the hard disk or an external archive device.

Begin by pressing the **Search** button. The **Disk Analysis** screen will appear. This screen shows a graphical representation of the recorded video stored on the internal hard disk.

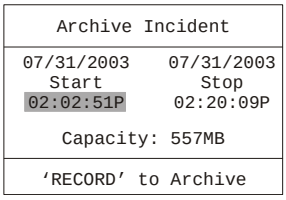


Rotating the **Jog** moves the two arrow cursors across the representation of the recorded video. As the cursors move across the screen the corresponding disk time is indicated in the upper right of the screen. The video representations are colour-coded by category. Rotating the **Shuttle** expands (zooms) the display. The lowest level (most detail) is indicated on screen with an **(L)**. Pressing the **Enter** button will start Playback from the cursor location.

QUICK ARCHIVE TO CD

it is possible to archive to CD from the **Disk Analysis** screen. To do this, the QuickWave Setup feature must be set to **ON** in the **Quick Wave Setup** dialog (see page 44).

Once this feature has been enabled, go to the **Disk Analysis** screen and select the required time and date of the recorded video and press the **Record** button. The **Archive Incident** dialog is displayed:



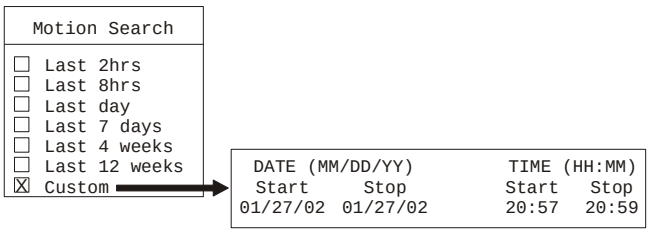
1. Use the **Jog** to modify the time and date parameters and use the **Shuttle** to move between the **Start** and **Stop** fields.
2. Press the **Record** button on the front panel when the parameters are set correctly.

   The CD Writer will open the CD tray when completed. The video can now be viewed on any PC equipped with a CD-ROM.

MOTION SEARCH

Pressing the **Search** button whilst in the **Disk Analysis** screen will bring up the **Motion Search** dialog. This dialog enables the user to perform a motion search of recorded video, with six preset time parameters and a custom search option. Rotate the **Jog** to navigate and the **Shuttle** to select a specific parameter, pressing **Enter** to continue.

If the **Custom** option is selected, playback starts and another window with **Start/Stop** and **Time/Date** options is displayed. These options provide the parameters to focus the search to a specific time period. Rotate the **Jog** to navigate and the **Shuttle** to adjust values. Press **Enter** when the settings are as required.

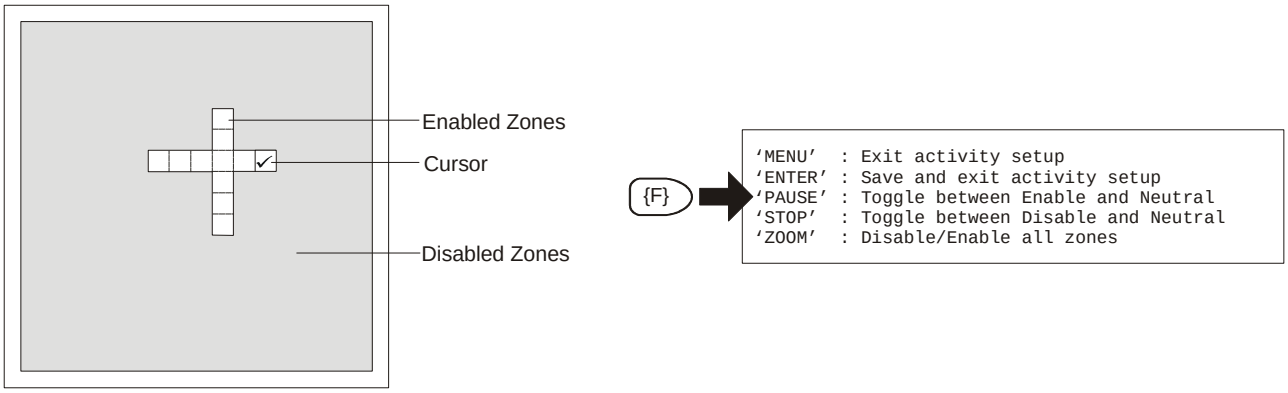


MOTION SEARCH

At this point (whether a preset time parameter or a custom search has been selected), the menu will be removed from the screen and playback from the currently selected camera will be displayed. Overlaying the video is the **Motion Search Setup** screen.

This screen allows the user to setup the active zones for the motion detection search (i.e., the zones the unit will look for motion within). . A 16 x 16 grid is superimposed over the current video image, allowing for precise configuration of search zones. Currently disabled zones are tinted and currently enabled zones clear.

Ensure that the required camera is selected by pressing the **Number** button and then press the **Function** button to access a help screen that will overlay the current video image.



The **Stop** and **Pause** buttons are used to determine the action of the cursor, and it's current status can be seen by the way it is displayed. It has three possible modes NEUTRAL (blank square), ENABLE (square with a tick inside) and DISABLE (square with a cross inside). No Action will have no effect on the current cursor position; Enable will change the current cursor position to an active search zone; Disable will change the current cursor position to a non-active search zone.

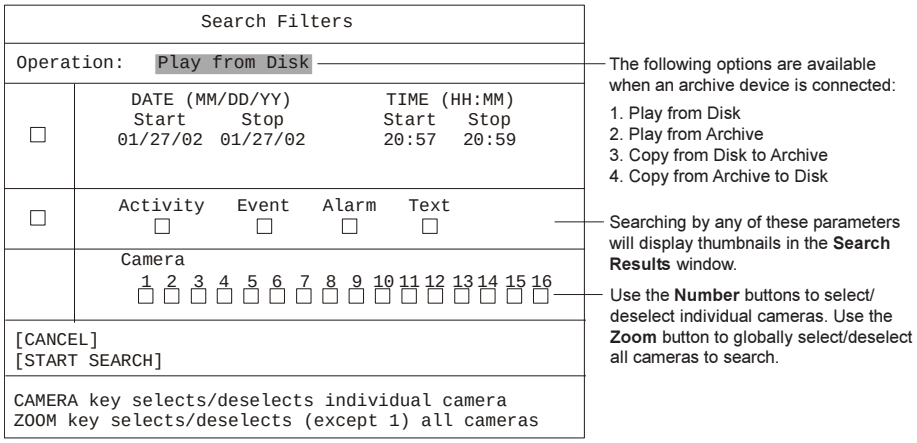
By default, all zones are initially enabled. To disable a zone or series of zones, first use the **Jog** (up/down) and **Shuttle** (left/right) to navigate to the zone. Next, press the **Stop** button. Next, use the **Jog/Shuttle** to move the cursor over the zones that are to be disabled. As the cursor leaves the zone, the zone will be tinted to indicate that the zone is now disabled. Using the cursor in this way, areas of the scene can be 'painted' with the cursor to become disabled zones. Enable disabled zones in the same way, using the **Pause** button.

Press the **Enter** button on completion of the activity setup to start the search. On completion of the search, the **Search Results** window is displayed. See page 61 for more details on this window.

SEARCH FILTERS

Pressing the **Search** button whilst in the **Motion Search** dialog brings up the **Search Filters** dialog. This dialog allows the user to:

- Specify the type of operation to be performed. The options are **Play from Disk**, **Play from Archive**, **Copy from Disk to Archive**, and **Copy from Archive to Disk**.
- Specify the start and stop date/time of the search.
- Search for recorded activity, events, or alarms.
- Search for a text string.
- Specify which cameras to search inclusively or exclusively.



SEARCH FILTERS

To specify the search parameters, follow the steps below:

1. Using the **Shuttle**, select the **Operation** that is to be carried out. Select from **Play from Disk**, **Play from Archive**, **Copy from Disk to Archive** and **Copy from Archive to Disk**. If no archive device is connected to unit, the **Play from Disk** option is automatically selected and can not be changed.
2. If the search is to include a date and time filter, use the **Jog** to navigate to the check box next to the date and time search parameters and press **Enter** button to go into Edit mode for these fields.
3. In the date and time search parameters, use the **Shuttle** to navigate between parameters and use the **Jog** to adjust values.
4. When these parameters are set as required, press the **Enter** button to exit Edit mode.
5. If the search is going to look for activity, events, alarms or text insertions, use the **Jog** to navigate to the check box next to these parameters and press **Enter** button to go into Edit mode for these fields.
6. In these fields, use the **Shuttle** to navigate and the **Jog** to check or uncheck the boxes. Only one of these four checkboxes can be ticked in a single search.
7. When the required checkbox is ticked, press the **Enter** button to exit Edit mode.
8. To select and deselect individual cameras for the search, use the **Number** buttons. Use the **Zoom** button to select all cameras, or press it again to deselect all cameras except camera 1. This is because at least one camera must be selected at all times.
9. To activate the search, use the **Jog** to navigate to the **Start Search** parameter. With the parameter highlighted, press the **Enter** button to begin the search operation.

   When the search is completed, the **Search Results** dialog will appear.

SEARCH RESULTS

Search results are displayed in the **Search Results** dialog. A maximum of 200 results can be displayed per search.

Two types of window can be displayed, depending on the type of search that is performed.

- For time/date searches, results are shown in a list format.
- For activity, text, motion, and alarm searches, results are shown in a thumbnailed format.

TIME/DATE SEARCH RESULTS

Search Results

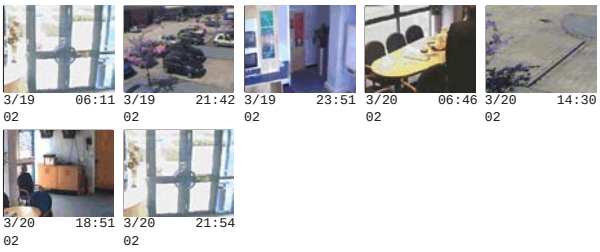
	Start Date	Start Time	Days	HH MM SS
000	01/21/2002	20:07:10	0	04:35:15
001	01/21/2002	20:08:10	0	00:01:55
002	01/21/2002	20:09:10	0	00:00:38
003	01/21/2002	20:10:10	0	01:07:22
004	01/22/2002	20:07:10	0	00:00:07
005	01/23/2002	20:07:10	0	00:08:56

6 Matches Found

‘PLAY REV/FWD’ to page up/down
‘ENTER’ to play event; ‘SEQ’ to repeatedly play event.

ACTIVITY, TEXT, MOTION, ALARM SEARCH RESULTS

Search Results



7 Matches Found

‘PLAY REV/FWD’ to page up/down
‘ENTER’ to play event; ‘SEQ’ to repeatedly play event.

To view video, hit the **Enter** button to play the currently highlighted search result or press the **Sequence** button to repeatedly play the currently highlighted search result. During playback, hit the **Enter** button again to play the next result from the search list.

Follow the directions on-screen to select, archive and playback video. Some options may be unavailable depending on the type of search performed. These options are not displayed. When archiving, the unit will not allow the amount of selected data to exceed the amount of space available on the target medium.

To exit the **Search Results** dialog without carrying out any further operations, press the **Menu** button

WAVEBROWSER AND WAVELINK

WAVEBROWSER

The MDR has an integrated web browser interface called WaveBrowser. The WaveBrowser option allows the user to view video from any Ethernet connected unit with software version 4.09 or above.

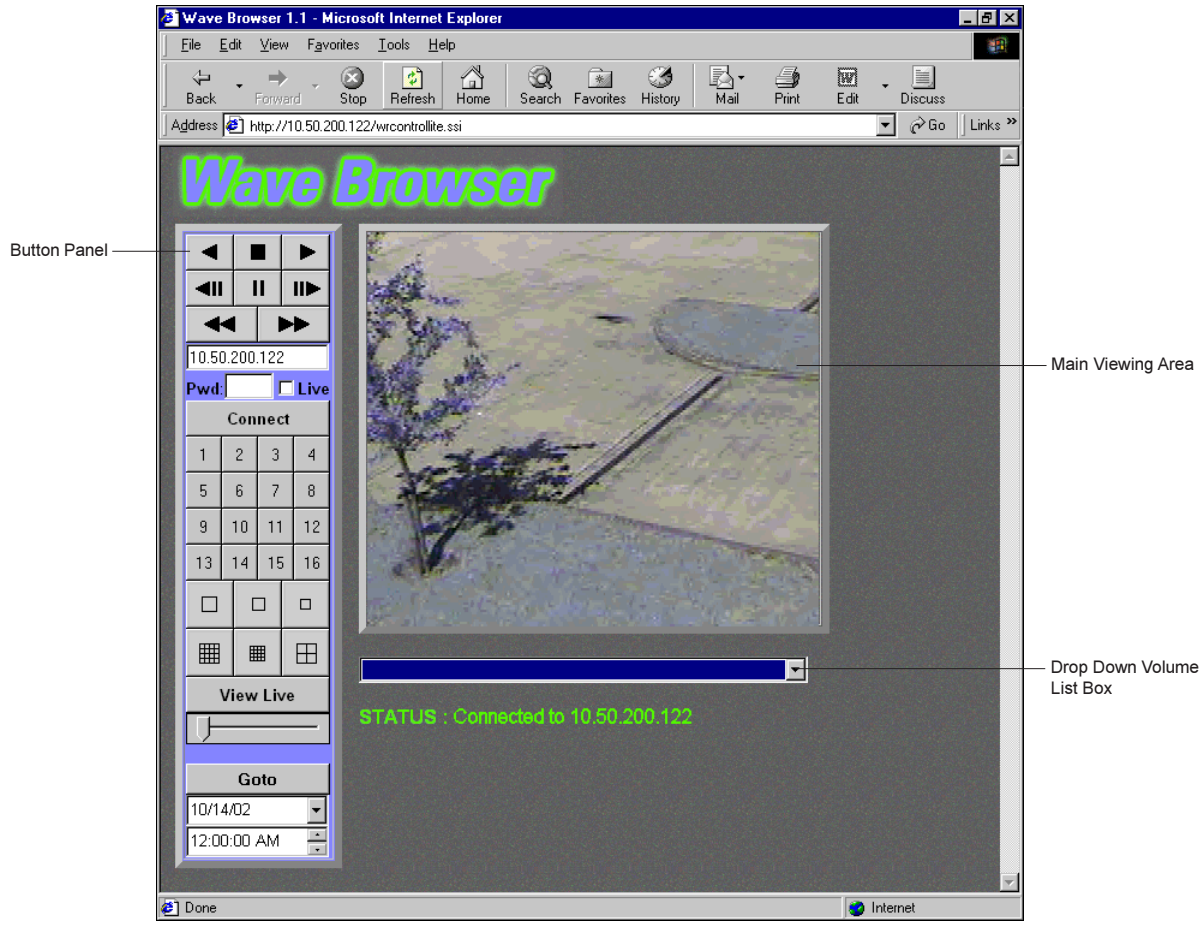
Configuring Internet Explorer for WaveBrowser Use

For WaveBrowser to function properly, certain ActiveX controls must be set correctly. To setup the ActiveX controls, follow the steps below

1. In Internet Explorer, click on the **Tools** → **Internet Options**.
2. Click on the **Security** tab.
3. Select **Local Intranet for the Web Content Zone**.
4. Click on the **Custom Level** button.
5. Ensure that both **Download unsigned ActiveX controls** and **Initialize and Script ActiveX controls not marked as Safe** are set to **Prompt**.
6. Click on the **OK** button.
7. Click on the **Yes** button in the warning message.
8. Click the **OK** button in the **Internet Options** window.

Accessing the WaveBrowser Interface

1. Launch Internet Explorer (version 5.5 or later) on any local Internet connected PC or laptop.
2. Type in the MDR IP address or hostname in the **Address** field and press **Enter**. The **Enter Network Password** dialog should appear.
3. Enter the correct **Username** and **Password** in their respective fields (the default username and password is **admin**).
4. Click the **OK** button. The **WaveBrowser** window should appear.
5. Type the IP address in the **IP Address** field.
6. Click on the **Connect** button.



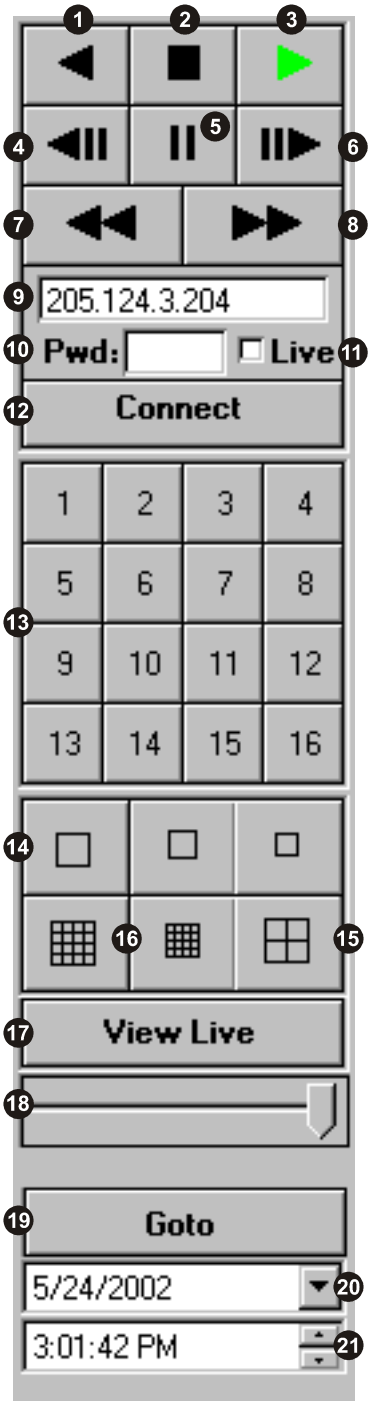
The **WaveBrowser** window consists of the following areas:

The Main Viewing Area
Pictures are displayed in this area in multi-camera, and single-camera formats. Picture display order is according to the information encoded by the unit used to create the original video data file.

Choose from the following displays:

- 16-way multiscreen display (large and medium)
- 4-way multiscreen display
- Large, medium and small single camera displays

The Button Panel
The button panel contains the following buttons and fields:



1. **Play Backward button**: Click on this button to playback video in reverse. The button turns from black to green when playback begins.
2. **Stop button**: Click on this button to halt all playback operations. The **Play Pointer Slider Bar** moves to the start of data.
3. **Play Forward button**: Click on this button to playback video. The button turns from black to green when playback begins.
4. **Single Frame Rewind button**: Click on this button to rewind the video a single frame.
5. **Pause button**: Pauses playback until the **Pause** button is pressed again. Clicking any of the buttons, except **Stop** will also resume playback. The **Play Pointer Slider Bar** stays at the current position while paused.
6. **Single Frame Advance button**: Click on this button to advance the video a single frame.
7. **Rewind button**: Click on this button to perform high-speed reverse playback. The button turns from black to green when rewind begins.
8. **Fast Forward button**: Click on this button to perform high-speed playback. The button turns from black to green when fast-forward begins.
9. **IP Address Field**: Enter the unit's IP address.
10. **Password Field**: Enter the unit's password, if necessary.
11. **Live checkbox**: Click in this box to enable live viewing before connecting.
12. **Connect/Disconnect button**: Click on this button(s) to connect to the unit.
13. **Number buttons**: Press any of these buttons to call up individual cameras for display.
14. **Single Camera Display Size**: Use these three buttons to choose small, medium, and large single camera displays.
15. **4-way Multiscreen button**: Selects a Large 4-way display.
16. **16-way Multiscreen button**: Use this two buttons to choose medium 16-way and large 16-way displays.
17. **View Live Button**: Click on this button while connected to view live video.
18. **Play Pointer Slider Bar**: This bar advances to the right to indicate the playback position on the disk. The user can drag the bar to navigate forward or backward.
19. **Goto Button:** Click on this button to go to the selected date for the drop down time and date boxes.
20. **Drop down Date Selection menu**: Click on this field to display a graphic calendar to select a date to view.
21. **Time Selection menu**: Click on the Up or Down Arrows to select a specific time to view.

The Drop Down Volume List Box
Click on the arrow to display a list of available disk volumes on the connected unit. Click on the volume to select.

The MDR also supports the use of WaveLink. This feature can be used to put command codes in the URL when calling actions the WaveBrowser is going to perform.

This feature can be used by web developers to link various cameras to specific web content. It will also be used by the MDR Email feature to allow the recipient of an alarm email to click on a link in the email, which causes the WaveBrowser to connect and play back at the time when the alarm occurred.

Functionality

The traditional WaveBrowser URL is **http://<IP_Address>/wrcontrollite.ssi**. This URL will start the WaveBrowser in the disconnected state. The MDR supports command codes placed after an underscore after **wrcontrollite** and before **.ssi**. For example: http://3.18.172.230/wrcontrollite**_c=1s=2a=3t=1361959858**.ssi.

The following table specifies the supported options:

Name	Code	Description	Example
Camera	c=<n>	Describes either the camera number for full screen (1=Camera 1, …16= Camera 16) or the type of the multiscreen display (100 =Multiscreen 16 large, 101=Multiscreen 16 small, 102=Quad screen)	c=10
Size	s=<n>	For full screen camera, describes the size of the display (1=large, 2 =medium, 3= small)	s=2
Action	a=<n>	Describes the action the WaveBrowser has to take: 0 No action 1 Normal Connection Play 2 Normal Connection Live 3 Normal Connection Goto 4 Live Connection	a=2
Time	t=<n>	When action is set to 3 (Goto), the time specifies where to go in number of seconds since 01/01/1960.	t=1361959858

Note: When an option is not specified, it will be set to 0. When a normal connection is requested, but the MDR unit is already connected via a normal connection, the WaveBrowser should open a live connection instead.

The default page, http://3.18.172.230, does not accept option codes and will open the WaveBrowser in disconnected state.

The example URL from above (http://3.18.172.230/wrcontrollite**_c=1s=2a=3t=1361959858**.ssi) requests the WaveBrowser to make a **normal connection**, **play back at 2/27/2003 10:53:32** displaying **camera 1** in **medium size**.

Email Links

The MDR is able to send emails when certain events occur (like videoloss, alarms, etc.). When in record mode, the MDR will add a WaveBrowser link in the email notification.

Clicking this link initiates WaveBrowser to be started, make a normal connection and play back the specific camera with a medium size video window at the time the event occurred.

TECHNICAL SPECIFICATIONS AND RS232 PROTOCOLS

General

External Power Supply	12 Volt DC. 70 Watt (5.8 Amp)
Power Supply Connector	2.1mm barrel connector, centre positive
Power Consumption	60 Watt nominal (single disk)
Operating Temperature Range	Operating: 0 to 40°C. Storage: -20 to +60°C.
Relative Humidity Range (Non-condensing)	Operating: 10% to 80%. Storage: 10% to 95%
Dimensions	445 x 356 x 64 mm (17.5 x 14 x 2.5 inches). 1.5 U, 19-inch rack unit.
Weight	5.44 kg (12lbs)

Connections

10/100 Ethernet Port	RJ-45 connector
RS232 Port 1	DB-9 Male connector
Aux Port	DB-9 Male connector. Use supplied audio cable.
RS232 Port 2	RJ-45 connector
Camera Inputs	BNC connectors. Auto-terminating. Colour & monochrome.
Monitor A Output (Y/C)	4-pin mini-DIN connector
Monitor B Output (Y/C)	4-pin mini-DIN connector
Monitor A Output (Composite)	BNC connector
Monitor B Output (Composite)	BNC connector
Monitor C Output (Composite)	BNC connector
Monitor D Output (Composite)	BNC connector
Monitor E Output (Composite)	BNC connector
RS485 Port	Two looping RJ-45 connectors
IEEE 1394 Firewire Port	6 position IEEE 1394 socket
SCSI Port	50 pin, High Density SCSI-2 female connector
Alarm I/O Port	Use supplied DB-25 PCB connector

Video

Video Signal Input	0.5 to 2.0 Volts peak-to-peak with Automatic Gain Control
Video Signal Output	1 Volt peak-to-peak into 75-ohm
Input Termination	75-ohm (Auto-terminating)
Display Memory	4 Megabytes
Resolution	Horizontal: 720 pixels. Vertical: 576 lines (484 NTSC)
Greyscale	256 levels
Colours	Y:U:V 4:2:2, 16.8 million colours
Compression Standard	Wavelets

Audio

Audio Input	RCA connector, 315mV, 40k ohms. Unbalanced.
Audio Output	RCA connector, 315mV, 600 ohms. Unbalanced.

Alarms

Inputs	1 per camera
Relay Configuration	User programmable as Normally Open or Normally Closed
Record Priority	Interleaved, Exclusive, or No Change
Alarm Status Indicators	Relay outputs, on-screen indicators. Status retrievable via RS232 port.

Motion Detection

Zones Per Camera	256: 16 x 16 grid
Sensitivity Settings	10 levels
Grey Levels Per Zone	256 levels
Motion Detection Status Output	Relay outputs, link to alarms or events, on-screen indicators. Status retrievable via RS232 port.

RS232 ALARM/EVENT GENERATION AND TEXT INSERTION PROTOCOL

The RS232 Alarm/Event and Text Insertion Protocol is designed to deliver Alarm, Event (commands) and Text data to the MDR from serial interface devices through the RS232 port.

Note: Setting and clearing alarms with this protocol is equivalent to activating and deactivatin alarms on the hardware alarm inputs.

Message Structure

- The **Delimiter** byte signals the start of a new message, and has a value of 0xFF.
- The **Class** and **Command** fields identify the type of message.
- The **Data Length** is a 16-bit value indicating the number of bytes in the **Data** portion of the message. Data Length is sent using Intel byte ordering (Little Endian).
- The Check Sum byte is the result of XORing all the bytes in the message.

Delimiter
Class
Command
Data Length
Data
Check Sum

Message Type

One message is currently supported to store text along with recorded video.

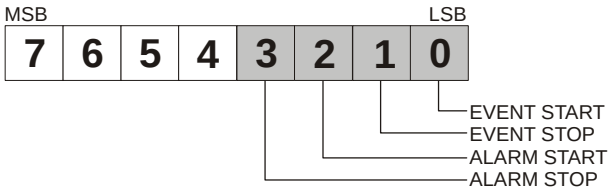
CMD_NEW_ADD_TEXT

- The **Class** byte is 0x14.
- The **Command** byte is 0x40.
- The **Data Length** is the number of data bytes in the message (from 2 to 502).
- The **Camera** byte indicates the camera associated with the alarm, event or text. The valid range is from 0 to 15.
- The **Alarm/Event** byte usage is described in the following section.
- **String** fields contain text characters. The string can be from 0 to 500 characters in length. The **String** field is not required. If text data is available, it will be recorded with the next video frame for the camera identified by the **Camera** field.

0xFF
0x14
0x40
Data Length [0]
Data Length [1]
Camera
Alarm/Event
String [0]
String [1]
:
String [n-1]
Check Sum

Alarm/Event Fields

The two least significant bits are currently used for Event commands. Bits 2 and 3 are used for the Alarm commands.



Alarm Actions

- **No Alarm Change (0000 00XXb)**

If both the start and end bits are clear, the alarm status and camera record rates will remain unchanged.

- **Start Alarm (0000 01XXb)**

If only the start bit is set, the MDR will enter the Alarm mode. The selected camera will become the alarm camera. Pre-alarm video will be recorded and the Alarm Record Rate will be initiated.

Note that every Start Alarm command should be sunsequently followed with a Stop Alarm command at some point. Failure to do so will render that alarm input useless, even if the alarm was latched and gets acknowledged from the front panel. A Stop Alarm followed by a Start Alarm will have to be sent to create a new alarm on that channel.

- **Stop Alarm (0000 10XXb)**

If only the stop bit is set, the selected camera's alarm status will be cleared. If no other alarms are present, the MDR will exit the alarm mode.

- **Momentary Alarm (0000 11XXb)**

If both the start and stop bits are set, a momentary alarm will be initiated on the selected camera. Pre-alarm video will be recorded at the Alarm Record Rate, after which the MDR will continue to record video at the normal record rate.

Event Actions

- **No Event Change (0000 0000b)**

If both the start and end bits are clear, there will be no change to the event status. The camera's record rate will not be changed.

- **Start Event (0000 0001b)**

If only the start bit is set, an event will be initiated on the selected camera. This will cause the selected camera, as will as any pre-event video to be recorded at the Event Record Rate.

- **Stop Event (0000 0010b)**

If only the stop bit is set, the current event on the selected camera will be terminated. This will start the post-event timer after which, the selected camera will resume recording at the normal record rate.

- **Momentary Event (0000 11XXb)**

If both the start and stop bits are set, a momentary event will be initiated on the selected camera. Pre-event video will be recorded at the Event Record Rate for the selected camera. The post-event timer will continue recording at the Event Record Rate, after which the selected camera will resume recording at the normal record rate.

Note: All Event messages will be ignored while an alarm condition exists in the MDR.

The unit supports two different communication types:

- Remote Front Panel Button Emulation
- Remote Configuration and Status

Remote Front Panel Button Emulation

Data Structure:

- Byte 1: 0xFF
- Byte 2: 0x55
- Byte 3: Front Panel Button Code

Description:

- Byte 1 and 2 are header bytes.
- Byte 3 contains the code for a specific front panel button.

The different buttons and their corresponding codes are as follows.

No Button Pressed		0
Record		1
Play		2
Stop		3
Alarm		4
Freeze		5
Zoom		6
Sequence		7
Reserved		8
Camera 1		9
Camera 2	10	
Camera 3	11	
Camera 4	12	
Camera 5	13	
Camera 6	14	
Camera 7	15	
Camera 8	16	
Camera 9	17	
Camera 10		18
Camera 11		19
Camera 12		20
Camera 13		21
Camera 14		22
Camera 15		23
Camera 16	24	
Reserved	25 - 40	
Menu		41
Enter		42
Reserved		43
Macro		44
Reserved		45-49
Monitor B	50	
Reserved	51-63	
Left Arrow		64
Right Arrow		65
Up Arrow		66
Down Arrow		67
Reserved	68-74	
Alarm and Sequence		75
*Alarm and Camera 1		76
*Alarm and Camera 2		77
*Alarm and Camera 3		78
*Alarm and Camera 4		79
*Alarm and Camera 5		80
*Alarm and Camera 6		81
*Alarm and Camera 7		82
*Alarm and Camera 8		83
*Alarm and Camera 9		84
*Alarm and Camera 10		85
*Alarm and Camera 11		86
*Alarm and Camera 12		87
*Alarm and Camera 13		88
*Alarm and Camera 14		89
*Alarm and Camera 15		90
*Alarm and Camera 16		91
Reserved	92-107	
Monitor C		108
Monitor D		109
Monitor E		110
Search	111	
Frame Reverse		112
Frame Forward		113
Play Reverse		114
Stop	115	
Play Forward		116
Monitor A	130	
2 Way Multiscreen	131	
4 Way Multiscreen	132	
6 Way Multiscreen		133
7 Way Multiscreen	134	
9 Way Multiscreen	135	
10 Way Multiscreen	136	
13 Way Multiscreen	137	
16 Way Multiscreen		138

*Must send a “No Button Pressed” command immediately following any of these commands.

Remote Configuration and Status

i) Data structure

Byte 1: 0xFF
Byte 2: Command Type
0xAA: (SET) Update MDR with data
0xBB: (GET) Extract data from MDR
Byte 3: Data Length (n)
Byte 4: Data Type
0x61: Restart MDR
0xFE: Send configuration data to MDR
0x09: Read Alarm History from MDR
0xFF: Read configuration and status data from MDR
Byte 5: Data byte 1
Byte 6: Data byte 2
:
:
Byte x: Data byte n

ii) Sending data to the MDR

a) Restart MDR

This command will restart the MDR.

Byte 1: 0xFF
Byte 2: 0xAA
Byte 3: 0
Byte 4: 0x61

b) Send data to MDR

Configuration data can be sent to the MDR to change the way it operates. The data is arranged in the form of 16 byte blocks, numbered from 1 to 213. Blocks 182, 183 and 185 are status blocks, and hence cannot be written to. For details about the contents of each block, contact Baxall and request the **Block Data Structure** for the MDR.

Byte 1: 0xFF
Byte 2: 0xAA
Byte 3: 17
Byte 4: 0xFE
Byte 5: Block Number (1-181, 184, 186-213)
Byte 6: data[0]
: :
: :
Byte 21:data[15]

After sending a block or series of blocks, block number 255 must be updated to signal the end of the configuration session. All data bytes for block 255 must be set to 0.

iii) Requesting data from the MDR

When a message of type 0xBB is sent to the MDR, it will respond by sending 16 bytes of requested data.

a) Read Alarm History List

Byte 1: 0xFF
Byte 2: 0xBB
Byte 3: 0
Byte 4: 0x09

When the “Read Alarm History List” message is received by the MDR, it responds by sending a start byte 0xFF, followed by ASCII strings for every alarm event in its alarm history list, and a stop byte, 0xFF. Each string is formatted as follows:

dd.bmm/ddbhh:mm:ssbaa<CR><LF>

dd: index number (00 - 99)
b: space character
mm: month (01-12)
dd: day (01-31)
hh: hours (00-23)
mm: minutes (00-59)
ss: seconds (00-59)
aa: alarm number (01-16)
<CR> Carriage return (0x0D)
<LF> Line feed (0x0A)

Example: 03. 11/27 22:48:58 15

b) Read data from MDR

Configuration and status data can be read from the MDR. The data is arranged in the form of 16 byte blocks, numbered from 1 to 213. For details about the contents of each block, contact Baxall and request the **Block Data Structure** for the MDR.

Byte 1: 0xFF
Byte 2: 0xBB
Byte 3: 1
Byte 4: 0xFF
Byte 5: Block Number 1-213 or 255 if all blocks are requested.

The MDR responds to the “Read data” request by sending all the requested data bytes consecutively, without any start or stop bytes.

A total of either 16 bytes or 3408 bytes will be transmitted, depending on whether a single block or all the blocks were requested.

APPENDIX:
EXTERNAL ARCHIVING DEVICES

Video archiving can be performed on both JBOD (Just a Bunch Of Disks) and RAID (Redundant Array of Inexpensive Disks) type devices. The following units have been tested for compatibility and are recommended as video archive storage devices.

MDAe

A JBOD based disk array, containing between one and eight hard disk drives. This is the recommended means of video archiving when the customer does not require data redundancy.

For more information on the Baxall MDAe device, consult the Baxall MDAe Installation and Operation Manual.

RAID Devices

A RAID based disk array can contain between one and fourteen hard disk drives. This is the recommended means of video archiving when the customer requires data redundancy. Two RAID product ranges have been qualified for use with Baxall digital video recorder equipment; the BellStor 2000 series by Bell Microproducts, and the ATAboy 1 and ATAboy 2 series by Nexsan Technologies.

To archive to a RAID device:

1. Connect to the unit using a standard 50-pin High Density SCSI-2 cable.
2. Power-up the RAID device. Check front panel LEDs to ensure proper operation.
3. Configure the RAID device using the front panel keys, the serial port, or the ethernet port. See the manual of the RAID device for details.

Note: Some menu setup may be required on the digital recorder unit connected to the RAID device before archiving can begin. See the user manual of the digital recorder for detailed information.

CD-ROM disks can be created by attaching a SCSI CD recording device to the SCSI port of the Digital Recorder. The CD recording device must have a minimum write speed of 4X and a minimum read speed of 16X. Approved CD recorders are listed on page 77.

Connection Requirements

The following connection requirements must be met when using CD recording devices. Failure to meet these requirements may result in error messages being displayed on the Digital Recorder when attempting to create CD's.

- Standard 50-pin High Density SCSI-2 cable
- SCSI address must be set to 0
- SCSI Bus must be properly terminated

Selecting Desired Video Data

The maximum amount of video data that can be archived on a CD is about 500MB, due to the overhead and housekeeping requirements of the system. If the amount of data stored on a unit is greater than this, it will be necessary to "filter" the search until the search results display an amount of data that is capable of being archived.

On the MDR, the **Search Filters** screen may be accessed by pressing the **Search** button three times. Select the **Copy from Disk to Archive** operation from the top of the **Search Filters** screen. Narrow the search further with time/date and other parameters if required. Once **Start Search** is selected, a **Search Results** screen will appear, listing all the recordings that match the search criteria.

Once the search results are displayed, use the Digital Recorder's front panel buttons to navigate through them. Place an "X" in the **[ ]** brackets to mark the files to be archived onto the CD-ROM. Selected files should not total more than 500MB. When the limitation is reached, attempts to mark additional files for archiving will not be successful.
When multiple small files are selected for archive, the total available space on the CD will be less than 500MB. 500MB is approximately equal to 1/2 hour of video recorded at 30 pictures per second.

Starting CD Recording Operations

Press the **Record** button on the Digital Recorder to activate the archiving function. During the recording of the CD-ROM, the unit will return to the Live mode and display a progress bar, which displays the progress of the CD-Write operation. During this operation, the unit will not record video. Multisession recording onto the same CD is supported.

Limitations on CD Operations:

- Restoring (copying a file from a CD to the Digital Recorder hard disk drive) is not supported.
- Erasing a file recorded on a CD is not supported.
- Playback of files recorded on a CD, through the Digital Recorder, is not supported.
- Background archiving to CD is not supported.

Exiting The Search Operation

Exit the Search operation with the **Menu** button.

The Digital Recorder supports the use of both Digital Archive Tape (DAT) and Advanced Intelligent Tape (AIT) devices.

DAT tapes and drives are available in DDS1 (2GB), DDS2 (4GB), DDS3 (12GB) and DDS4 (25GB) capacities. The Digital Recorder supports only DDS3 and DDS4 tape drives.

AIT tapes and drives are available in AIT1 (25GB) and AIT2 (50GB) capacities. The Digital Recorder supports both.

SCSI Setup

The SCSI bus must be terminated properly. Otherwise, the system will not operate properly. Units are not always packaged with the cables and terminators.

The SCSI device address MUST be set to zero or the device will not be recognized. Consult the device manual for information on how to set the address. Units are not always shipped with the address set to zero.

Using Tape Devices

DAT devices may be used for selective archiving but are not recommended for background archiving operations. This is because the units have a diagnostic routine that stops the recording operation after each 24 hours of continuous use. When this occurs, the unit requires that a cleaning tape be inserted before recording operations can begin again. This presents the possibility that recording may halt in the middle of an extended archiving situation. AIT devices do not have this limitation.

Tape units have an **Eject** button, a **Power** button, and LEDs for unit status. These may include **Status** (cleaning required and fault condition), **Tape** (tape present or tape fault), **Busy** (tape present and busy) and a **Power** indicator. The exact names and quantity of indicators varies with the different manufacturers products and drive type. The **Eject** button will unload a tape from the drive and eject it from the unit. The tape cartridge has a write-protection tab, which prevents data being written to it.

To use the unit, press the **Power** switch on the front panel. The power indicator should light, and the LEDs may blink or be on steady as the unit performs a self test. When the self-test is completed a tape cartridge may be inserted. The indicators may blink if the tape cartridge is write protected, and there is normally some indication of a busy status before the tape is fully loaded.

Software drivers in the Digital Recorder control the reading and writing operations of the tape. When the unit is reading or writing, a BUSY status should be visible.

To remove a tape from the unit, press the **Eject** button. The cartridge will eject automatically. Do not push the **Eject** button while the unit is indicating a busy status. To do so will result in lost data and may also destroy data on the tape.

Selecting Desired Video Data

The Digital Recorder must be set to the mode which allows user selected video clips to be copied to the archive device.

On the MDR, this is done using the **Search Filters** screen. This screen may be accessed by pressing the **Search** button three times. Select the **Copy from Disk to Archive** operation from the top of the **Search Filters** screen. Narrow the search further with time/date and other parameters if required. Once **Start Search** is selected, a **Search Results** screen will appear, listing all the recordings that match the search criteria.

Use the Digital Recorder's front panel buttons to navigate through the search results. Place an "X" in the **[ ]** brackets to mark the files to be archived onto the tape device. Selected files should not total more than the available space on the target medium, which is determined and displayed on the **Search Results** screen. When the limitation is reached, attempts to mark additional files for archiving will not be successful.

Starting Archiving Operations

Press the **Record** button on the digital recorder to activate the archiving function. During the recording of the tape device, the unit will return to the **Live** mode and display a progress bar, which displays the progress of the archive operation.

RESTORING TAPE HEADERS

If the SCSI link between the Digital Recorder and the tape drive fails while data is being written to the tape, as much data as possible is restored when the link is re-established. Most of the header information is recovered from the disk, with the remaining data recovered from the tape. This recovery operation typically takes several minutes, depending on the relative position of the data from the start of the tape.

If the power to the drive is interrupted while the drive was writing data to tape, the data recovery process may take considerably longer because the position of the last valid data must be determined.

TAPE CAPACITY

The tape capacity is read from the drive when a new tape is being loaded. The capacity reported by the drive is only an estimate, and varies with the make of the drive and tape. This estimated value is used in computing the percentage of space left while background archiving (or when selecting events to be archived).

During background archiving, information is written until the physical end of medium (EOM) is encountered. When a tape has been filled, the full capacity will be used rather than the estimated capacity reported by the drive. The full capacity will continue to be used until the tape is erased, after which the estimated capacity will be used again.

ERASE MEDIUM

The user can use the **Erase Medium** menu selection on the digital recorders to erase a tape.

A progress bar tracks the erase operation. It reaches 100% when the tape has been erased. The bar is not updated smoothly, but rather in stages during the erase operation.

Note: When Background Archive Mode is active, the **Erase Medium** menu selection will not be available from the digital recorder menu.

ARCHIVE ERROR MESSAGES

The archiving error messages have been expanded to display different text strings. The alarm relay will only be set if the string is **Archiving Failed.**

Mode	Message	Reason
Selective Archive	Medium not present.	• The tape cannot be selected
	Not all data was archived	• Reached EOM on the tape • The Archive Mode is turned OFF
	Medium is write-protected	• Cannot write to tape as write tab is open
	Archiving Failed †	• The write command failed • The drive is disconnected
Restore From Archive	Medium not present	• The tape cannot be selected
	Not all data was archived	• The Archive Mode is turned off
	Can’t read medium	• The read command failed • The drive is disconnected
Play From Tape	Can’t read medium	• The read command failed • The drive is disconnected
Background Archive	Archiving Failed †	• The write command failed • The drive is disconnected
† The alarm relay is set if this message appears		

THE ARCHIVING ICON

When the unit exits Record mode during background archiving, a white tape icon appears in the bottom right hand corner of the monitor. It indicates that archiving is still in progress. The icon remains until all information has been written to tape, and the tape headers have been updated.

If the tape becomes full before all the information has been written to it, the tape is ejected, and the archive icon remains on the monitor. The icon is cleared when a new tape is loaded.

Turning off Background Archiving in the menus can also clear the icon. This action also flushes the remaining data buffers. This operation may take a while if a tape is being loaded or ejected.

Note: The Digital Recorder should not be turned off if the archive icon is visible and data is still being written to tape.

Disk Array Archiving Devices

JBOD	Baxall MDAe
RAID	Bellstor 2000 Series, Nexsan ATAboy 1 and 2 Series

CD-ROM Archiving Devices

CD-ROM disks are created by attaching a SCSI CD recording device to the SCSI port of the Digital Recorder. The following CD writers have been tested and approved for use with Baxall Digital Recorders. Some of the models may be phased out by the manufacturer and may no longer be available.

Maximum Write Speed 4X	Yamaha CRW - 4416SXZ (This model is not currently available)
Maximum Write Speed 8X	Yamaha CRW - 8424SXZ (This model is not currently available)
Maximum Write Speed 8X	Yamaha CRW - 8824SXZ (This model is not currently available)
Maximum Write Speed 16X	Yamaha CRW - 2100SXZ (This model is not currently available)
Maximum Write Speed 20X	Yamaha CRW - 2200SXZ (This model is not currently available)
Maximum Write Speed 32X	Yamaha CRW - 3320SXZ (This model is currently available)
Maximum Write Speed 12X	Plextor Plexwriter - 12/10/32S (This model is not currently available)
Maximum Write Speed 40X	Plextor Plexwriter - 40/12/40S (This model is not currently available)

IEEE 1394 Firewire Hard Drives

80GB	Western Digital WD800B02RNN
120GB	Western Digital WD1200B02RNN
200GB	Western Digital WD2000B02RNN

Tape Archiving Devices

The Digital Recorder unit provides a 50-pin High-Density, Female, SCSI-2 port for the archive system. The tape archive system must be an external DAT or AIT drive. The following table lists the currently acceptable models.

Drive	Single Tape	Tape	Terminator	Cable
DDS3 DAT	HP DAT-24 C1573D	C5708A	HP P/N K2291; 68-pin male, High Density active	HP P/N K2286
DDS3 DAT	HP DAT-24 C1556D	C5708A	HP P/N K2291; 68-pin male, High Density active	HP P/N K2286
DDS3 DAT	SONY SDT-D9000ME	DGD125m	50-pin male Centronics active	50-pin Centronics male to 50-pin High Density male
DDS4 DAT	SONY SDT-D11000ME	DGD150p	68-pin male High Density active	68-pin High Density male to 50-pin High Density male
AIT1	SONY SDX-D400C	SDX1-25C SDX1-35C	68-pin male High Density active	68-pin High Density male to 50-pin High Density male
AIT2	SONY SDX-D500C	SDX2-36C SDX2-50C	68-pin male High Density active	68-pin High Density male to 50-pin High Density male

Accessories—Tapes

Maxell HS-4/125S	DDS3 for Sony or HP DAT Drives
Maxell HS-4/150S	DDS4 for Sony or HP DAT Drives
Maxell SDX-T3C	AIT-1 for Sony AIT Drives
Maxell	AIT-2 for Sony AIT Drives

Accessories—SCSI Terminators

www.cable4pc.com	X-824: CN50-M, Active, for Sony DAT Drives
www.cable4pc.com	X-854: HPDB68M, Active, for Sony AIT Drives
CompuPlus	40-0008: Centronics 50-pin Male, Active, for Sony DAT Drives
CompuPlus	40-0021: High Density 68-pin Male, Active, for Sony AIT Drives

Accessories—SCSI Cables

www.cable4pc.com	X-673: HPDB50M - HPDB50M, 50-pin High Density Male to 50-pin High Density Male for Yamaha CD-RW
www.cable4pc.com	X-653: HPDB50M - CN50-M, 50-pin High Density Male to 50-pin High Density Male for Sony DAT
www.cable4pc.com	X-733: HPDB68M - HPDB50-M, 68-pin High Density Male to 50-pin High Density Male for Sony AIT
CompuPlus	40-0020: 50-pin High Density Male to 50-pin High Density Male for Yamaha CD-RW
CompuPlus	40-0026: 50-pin Centronics Male to 50-pin High Density Male for Sony DAT
CompuPlus	40-0025: 68-pin High Density Male to 50-pin High Density Male for Sony AIT
CompuPlus	40-0032: 50-pin High Density Male to 50-pin High Density Male

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