

DVR-USB Recorder

Quick Start Guide

OPERATION and MAINTENANCE MANUAL
P/N MS908, Revision: 011518



CUES® equipment is designed to be easy to use during day to day operation. However, it is powered electrically and thus must be operated with care and safety. PLEASE READ THE INFORMATION ON SAFETY AND MAINTENANCE EVEN IF THE SYSTEM IS SET UP BY SOMEONE ELSE.

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We would be pleased to hear from you. If you see any errors or desirable extensions or improvements, please write us at the following address, C/O Operator's Manuals: **CUES**® Corporate Office: 3600 Rio Vista Avenue Orlando, Florida 32805

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Styles and specifications are subject to change without notice.

First version published in 2004. Printed in the United States of America.

SAFETY PRECAUTIONS

Precautions must always be taken when operating electronic equipment. Exposed wires, damaged equipment, or improper operation can lead to a dangerous situation.

Please take a few minutes and read this entire manual prior to operating the equipment. Follow all safety procedures and thoroughly inspect equipment prior to use each day. This will help the equipment retain its full value and will reduce the risk of injury, property, and/or equipment damage.



- Read the entire manual before attempting to connect or operate any equipment.
- Connect and disconnect cables only when the electric power is turned OFF.
- Never remove protection covers from the equipment or power generator. Internal repairs should only be done by an authorized CUES technician.
- Upon receipt of the equipment, check for visible damage. If there is any evidence of rough handling, if damage is found, or if any equipment is missing, please contact the CUES Customer Service at 1-800-327-7791.

PERSONAL SAFETY EQUIPMENT

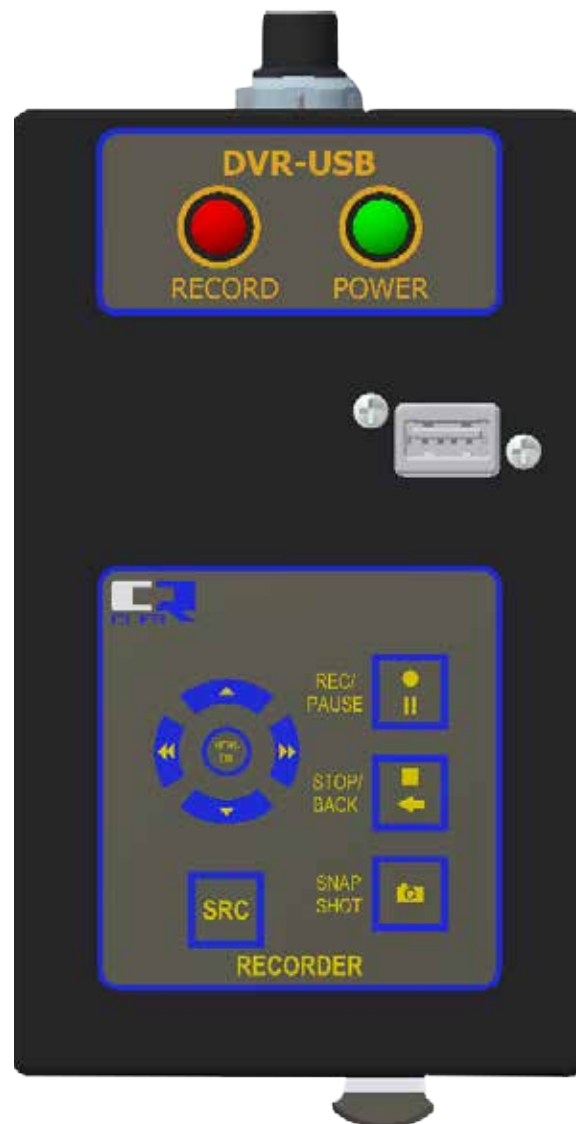
CUES stresses the use of appropriate safety equipment during system operations. Recommended minimum safety equipment includes, but is not limited to the following:

- Safety Goggles
- Work Gloves
- Steel Toe Boots
- Hard Hats
- Flashlights
- Safety Lines
- Gas Detectors
- Respirator
- First Aid Kit
- Ventilating Fans

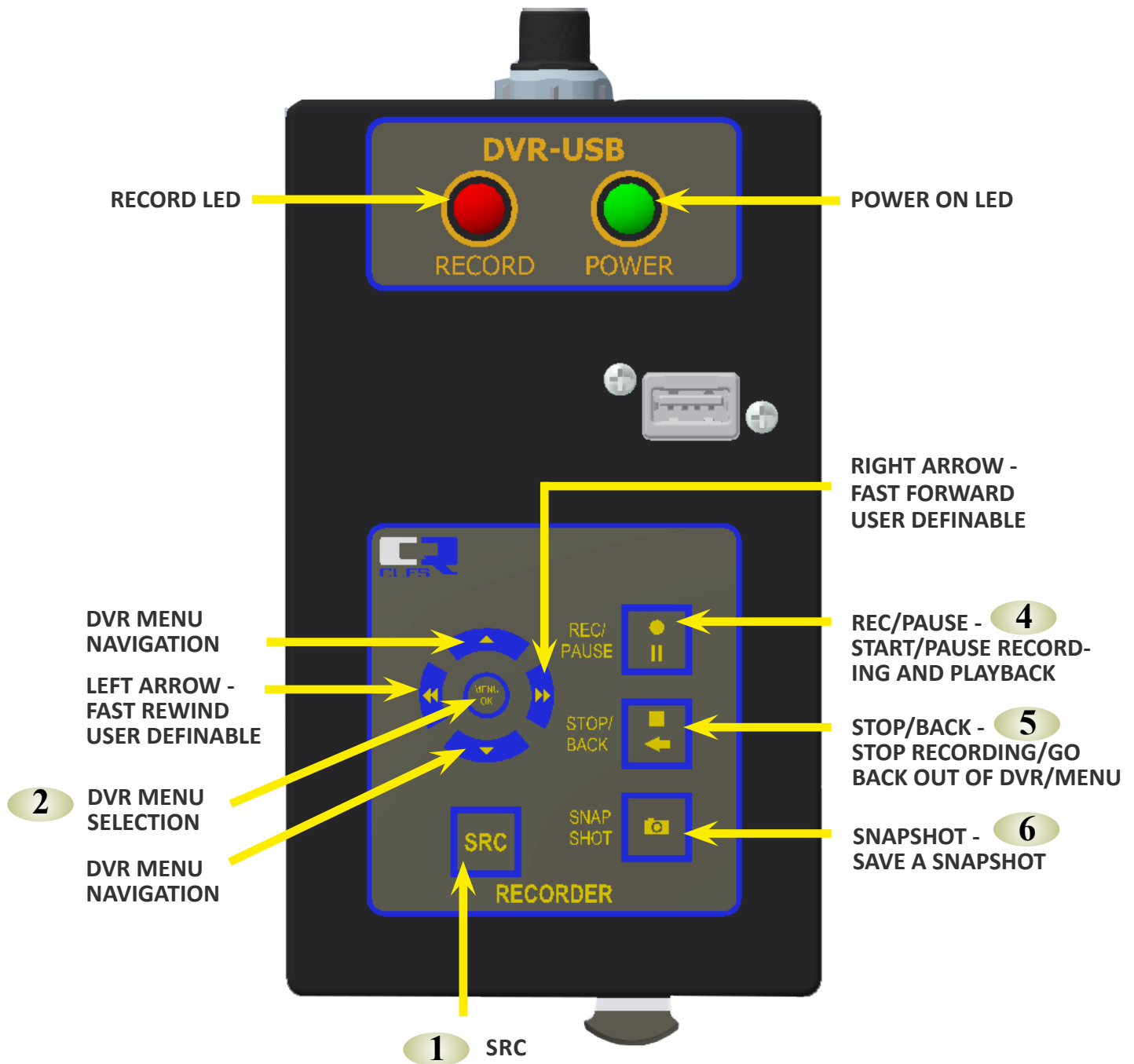
CUES® makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from misuse of the products.

OVERVIEW - WELCOME TO THE CUES DVR-USB

Thank you for choosing the CUES DVR-USB recorder. You now have all the options you need for recording and playing back your manhole and pipeline inspections. The recordings are saved to a USB flash drive. The DVR-USB is an external device that you connect to your video source and a mobile storage device. You can start recording right away without having to worry about configuring anything.



KEYPAD DIAGRAM



KEYPAD FUNCTIONS - RECORDER

KEYPAD FUNCTIONS (RECORDER)

When the system is powered on the video source is set to DVR. The DVR functions can be toggled between Recorder Mode (Default) and Menu Mode. The DVR Recorder Mode enables recording of live video and individual snapshots from live video. DVR Menu Mode accesses DVR set-up screens and pre-recorded videos.

1. SRC – Video Source

This button switches the source of video output to the monitor between the raw video coming into the recorder and the video being output by the DVR module. It can be used to bypass the DVR so its status icons don't appear on the viewing screen or if the input/output processing of the video causes undesirable effects during camera motion.

2. MENU/OK – DVR Menu Selection

The MENU/OK button is used to enter the DVR Menu Mode (from DVR Recorder Mode) and to select the highlighted command when in the DVR Menu Mode. MENU/OK also begins a playback of a pre-recorded video from the Play Video : External or Play Video : Internal menu. The STOP/BACK button is used to back out of the menu structure, in one step increments, eventually returning to Recorder Mode.

3. DVR Menu Arrow Keys

- Up Arrow – used to navigate DVR menu screens when in DVR Menu Mode.
- Left Arrow – fast rewinds pre-recorded file. Increments in user definable time amounts with each button press.
- Left Arrow - used to navigate DVR menu screens when in DVR menu mode.
- Right Arrow – used to navigate DVR menu screens when in DVR Menu Mode.
- Right Arrow – fast forwards pre-recorded file. Increments in user definable time amounts with each button press.
- Down Arrow – used to navigate DVR menu screens when in DVR Menu Mode.

4. REC/PAUSE – Record/Pause

- Toggles between recording (MP4) and pausing live video when in live video mode.
- Toggles between playing and pausing video when in DVR recorder mode.

5. STOP/BACK

- Stops recording when in DVR Recorder Mode.
- Backs out of menu structure, in one step increments, when in DVR Menu Mode.

6. SNAPSHOT

- Records snapshot (JPG) of video image when in live video mode.
- Snapshot may be taken while recording video.

Reference the following Digital Video Recorder Instructions for more detailed operational instructions of the DVR.

RECORD OF REVISIONS

This Record of Revision page is designed to allow the manual user to determine the engineering/manufacturing level to which the manual is written. As engineering changes to this hardware are made at CUES, necessary information in the manual will be revised to reflect those changes. The latest change level and the rationale for any change(s) will be explained in tabular format on this page to allow the manual user to be better equipped should the need arise to call CUES regarding technical information.

ORIGINAL MANUAL	REVISION	CHANGE DESCRIPTION
DVR-USB	040112	Initial preliminary release
	121517	Updated manual to include new DVR-USB instructions.
	011518	Removed DVR-USB instructions adn added new Appendix P/N EC2978.APP

CUES ("CUES") warrants that all parts, components, and equipment manufactured by CUES shall be free from defects in material and workmanship under normal use and service for which it was intended for a period of twelve (12) months from the date of shipment of materials by CUES to the purchaser. CUES' obligation under this warranty is limited, at CUES' option, to replacing or repairing, free of charge, any defective materials returned, freight prepaid, to the CUES designated service facility. For all warranty claims, the materials must be returned in accordance with CUES Material Return Policy.

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CUES neither assumes nor authorizes any person (including employees, agents, or representatives of CUES) to assume for it any other liability, guarantee, or warranty in connection with the sale or use of the materials, and no oral agreements, warranties, or understandings exist collateral to or affecting this warranty.

This warranty shall not be extended, altered, modified, or waived except by a written instrument signed by CUES.

CUES MATERIAL RETURN POLICY

To ensure the orderly return of CUES products from our customers and to assure proper credit and warranty replacements handled in a timely manner, CUES has implemented a MATERIAL RETURN AUTHORIZATION (MRA) SYSTEM. Please read and follow the instructions below to ensure your MRA is handled properly and efficiently:

1. Once it is determined that a CUES product needs to be returned, call the CUES Parts Department in Orlando at 1-800-327-7791.
2. CUES will provide an MRA number by phone and ask a few questions.
3. CUES will then mail or fax the MATERIAL RETURN AUTHORIZATION (MRA) FORM with the MRA number, or include it with the replacement parts, if applicable.
4. Follow all instructions on the MRA Form. Make 2 copies - one for your records and the other will be used as a packing list.
5. Place an MRA sheet in with the parts that are shipped back to CUES along with a copy of the original packing slip or invoice, if possible. Send only the parts originally agreed upon with your Parts Representative. Any deviations/changes will require an additional MRA.
6. Make sure to include a copy of the MRA form for a packing slip.
7. Write the MRA number on the outside of the box.
8. Please take care in packing the parts that are to be shipped back to CUES. Parts must be individually protected from each other and appropriate packing material must be used to prevent damage during shipping.
9. Freight on the material returned is to be prepaid by the customer. Depending on the warranty determination, CUES, at its' option, may credit freight charges both ways.
10. The parts must be returned to CUES within 5 days of receipt of the MRA for credit to be granted.

Under normal circumstances, a warranty determination can be made within 30 days, and if under warranty, the part will be replaced at no charge. A credit will be issued if you have already received a replacement part. No credits will be issued until CUES receives the defective part.

*****NOTE*****

CUES will not warrant look-alike parts sold by competitors and reserves the right to charge a restocking fee.

CUES shall not be liable for any loss or damage resulting, directly or indirectly, from the use of the materials, or for special, indirect, or consequential damages, economic losses, loss of profits, loss of business, or loss of business opportunity.

Without limiting the generality of the foregoing, this exclusion from liability embraces purchaser's expenses for downtime or for making up downtime, damages to property, and injury to or death of any persons.

CUES neither assumes nor authorizes any person (including employees, agents, or representatives of CUES) to assume for it any other liability, guarantee, or warranty in connection with the sale or use of the materials, and no oral agreements, warranties, or understandings exist collateral to or affecting this warranty.

This warranty shall not be extended, altered, modified, or waived except by a written instrument signed by an authorized CUES representative.

CUES MATERIAL RETURN AUTHORIZATION

Cust #:	Name:			Contact:	Date: 4/21/2004
Original SO #: N/A	SO Orig:	Dated:	New SO #:	S.O. To Be Credited:	
Return For:	Reason:	Territory	Prod. Ref. Cd: 51200	Orig:	
Explanation:					
Items Returned					
1					
2					
3					
4					
5					
6					

To ensure your MRA is handled properly and efficiently, please follow the instructions below.

1. Ship parts back within five (5) business days of receiving your MRA number. Parts ordered in error are subject to a restocking fee.
2. Send only the parts originally agreed upon with your customer service representative. Any deviations will require an additional MRA.
3. Make a copy of this sheet and keep the original for your records. Use the copy as a packing slip.
4. Write the MRA number on the outside of the box.
5. Parts must be individually protected from each other (original packaging would be best) and appropriate packing material must be used to prevent against damage during shipping.

Note: If parts are not well protected and arrive at our facility damaged in any manner, we will automatically reject them and return them to you without credit.

PARTS WILL BE RETURNED TO CUSTOMER AT CUSTOMER EXPENSE WITHOUT AN MRA NUMBER DOCUMENTED ON BOX. CUES IS NOT RESPONSIBLE FOR SHIPMENT FROM CUSTOMER TO CUES.

Use this section as a Packing Slip.

Please remember to write the
MRA number on the box.

MRA #:
XXXX

Return To:

Cues
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Orlando, Fl. 32805
(407) 849-0190
FAX (407) 425-1569
WATS 800-327-7791

CUES PARTS & SERVICE

At CUES, we realize your return on investment is directly related to daily production in the field. By stocking the largest inventory of OEM equipment in our industry, CUES strives to ship all parts orders on the same day or within 24 hours after receipt of the order.

Whether you need a camera or a fuse, CUES will quickly process and ship your order in accordance with your schedule requirements! Our experienced parts professionals can help you with parts identification, shipping methods, equipment operation questions, and connect you to the correct specialist for troubleshooting!

CUES offers four convenient stocking locations that contain a large assortment of parts, finished products, portable, and truck mounted systems. Texas, Arizona, Oklahoma and Louisiana customers can be serviced by our local dealerships. Contact us at your most convenient stocking location! For authorized dealer locations, log onto our website at www.cuesinc.com.

Parts can be ordered via phone or facsimile! For operating hours, contact information, and locations, log onto our website at www.cuesinc.com.

Contact us at your most convenient stocking location! Log onto our website at www.cuesinc.com to view the CUES Parts Department & Dealers hours & locations.

CUES Parts Department: Parts turnaround is normally within 24 hours after receipt of order. Please note that special shipping arrangements can be made at the time of the order. All return shipments received at CUES freight collect will be refused upon delivery unless previously authorized by CUES personnel. Normal operating hours are 8am to 5pm, EST., Phone: 800-327-7791, Fax: 800-831-1184.

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For West Coast Customers:

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Phone: 800-544-8695

Canada

For Canadian Customers:

The parts and service depot is located at 1675 Sismet Road, Unit 2 & 3, Mississauga, Ontario L4W1P9
Phone: 905-238-9178

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CUES Midwest:

www.cuesmidwest.com
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Waukesha, WI 53186
Phone: 262-717-3165
Fax: 262-717-3167

Innovation for over

50
Years

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software. For over 50 years, CUES has provided innovative pipeline inspection technology and solutions to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

In addition to inspection equipment, CUES also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable

of using a wide variety of grouting products. CUES also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser for Sonar based systems.

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DVR-USB Operating Appendix

To be used with:

MS908, Standalone DVR User Guide

CH915, PICS User Manual

CH905, MPlus+ User Manual

MK900, MARK3 User Manual

P/N EC2978-APP, Revision: 03.27.2018
For Firmware Revision 1755

DIGITAL VIDEO RECORDER INSTRUCTIONS

DIGITAL VIDEO RECORDER INSTRUCTIONS

1. Press the [MENU/OK] button to display the main menu or select the currently highlighted item, or to select a filename for copying, moving or deleting when in 'Group' mode selection.
2. Press the UP and DOWN arrows to cycle through the choices in menu.
3. Press the [STOP/BACK] button to back out of the menus usually one level at a time. Press the [STOP/BACK] button when done selecting filenames for copying, moving or deleting when in 'Group' mode selection.
4. Press the [REC/PAUSE] button to start recording a video.
5. Press the [SNAPSHOT] button to take a snapshot.
6. Press the RIGHT and LEFT arrows when viewing a video to fast forward or rewind the video. Press the LEFT arrow when done selecting filenames for copying, moving or deleting when in 'Group' mode selection.

DIGITAL VIDEO RECORDER INSTRUCTIONS

A SHORT DISCUSSION ABOUT FILENAMES

The system automatically provides a name for videos and snapshot files. The name is created as:

YYYYMMDD-xx.ext

where:

YYYY is the four digit year

MM is the two digit month

DD is the two digit day

xx is the number of that video or snapshot taken that particular day, starting with 00

ext is either .mp4 for video or .jpg for snapshot

Files are always displayed in reverse alphabetic order.

If there are more than 16 files to be displayed, the 17th entry on the display will be '...'. Selecting '...' will take the operator to the next screen of up to 16 files.

Files may be renamed, but it requires that a USB keyboard be inserted into one of the external USB ports. The procedure for renaming files is described later in this document.

DIGITAL VIDEO RECORDER INSTRUCTIONS

NOTES ON INTERNAL AND EXTERNAL STORAGE

- The DVR-USB contains a 128 GB internal USB flash drive and a 16 GB external USB flash drive.
- The default setting is for all video recording and snapshots to be saved to the external USB flash drive.
- The flexibility exists to be able to store to the internal, external or both USB flash drives simultaneously, depending on the strategy that works best.
- Files on the external flash drive can easily be moved to a PC by removing it from the DVR-USB and inserting it into a PC. Once the files are moved to a PC they can quickly be deleted from the flash drive in order to make room for its usage once again.
- Although the internal drive is non-removable, files can individually be transferred between the internal and external drives in either direction.
- Having both internal and external drives makes storing backups of videos or snapshots possible.
- Approximately 12 hours of high definition video may be stored on the 16GB external drive.
- Frequent backups are recommended.

The operator is able to set to default device for storing videos and snapshots through the Setup Menu which will be covered later. When playing videos, viewing snapshots, moving, copying or deleting files, the operator first selects the storage device (either internal or external).

WARNING: If using a flash drive not supplied by CUES, it must be formatted with a FAT32 file system. Many newer flash drives, especially those larger than 32GB, do not come formatted to FAT32 (instead, typically, exFAT).

DIGITAL VIDEO RECORDER INSTRUCTIONS

NOTES ON INTERNAL AND EXTERNAL STORAGE - CONTINUED

If a flash drive of the wrong format is inserted in the external USB drive, the DVR-USB will display an error message 'External Storage Error'. Further, if the operator selects 'System Information' from the 'Setup' menu, it will say 'Unsupported Device' for the external drive.

In order to format a flash drive to FAT32, see the section in this appendix 'Formatting a flash drive'. Note that Firmware Version 1753 or later is required to format a flash drive through the DVR-USB menu.

WARNING: The external flash drive should not be removed while the system is writing to it. The message "Wait until safe to remove ..." will appear on the display when it is writing to the external flash after the operator has pressed the [STOP/BACK] button. Do not remove the flash until this message has been cleared from the screen.

WARNING: When recording to a particular drive or to both drives simultaneously, if either drive fills up during this process, the recording will stop and an error message 'Storage full or write error' will be displayed. The last few frames recorded may also be lost in order to free up space needed for indices. However, the file stored will be viewable.

Operators may note that when a recording is begun the approximate amount of recording time is displayed for the first several seconds. If recording to both the internal and external DVR-USB flash drive simultaneously, the approximate recording time of the DVR-USB device with the least capacity is shown.

At any time, the operator may check the amount of free space remaining on any of the drives being used to store data. See the section 'Viewing the amount of space remaining on the flash drives'.

Drive space may be maintained by moving or deleting files. See the sections in this document:

- Individual Copying or Moving of Video or Snapshots from Internal to External or External to Internal
- Individual Deleting of Files from Internal or External
- Group Copying or Moving of Video or Snapshots from Internal to External or External to Internal
- Group Deleting of Files from Internal or External

DIGITAL VIDEO RECORDER INSTRUCTIONS

NOTES ON INDIVIDUAL VERSUS GROUP ACTIONS

When copying, moving or deleting files, there are two modes of performing these actions: Individual and Group. The Individual mode is quicker if the operator only needs to perform a function on a single file. However, if several files need to be operated on, especially when they are to be moved or copied, using the group mode may be beneficial. This is because the list of files can be selected and then the operation initiated to act upon them. Once the operation begins, the operator could work on something else and not have to wait at the computer while it performs a batch of operations.

Regardless of whether the operation chosen is individual or group, if the operator tries to copy or move a file to a target drive that already has a file of the same name, the operator will be given an opportunity to overwrite the target file.

For a individual copy, move or delete, the operator can alternately choose to 'cancel' the operation prior to performing it.

In the case of copying or moving a group of files, rather than 'cancel' there will alternately be options to 'overwrite all' and to 'skip'. 'Overwrite all' will make it so that the current and any subsequent files found to exist on the target drive will be overwritten without the operator having to decide separately. 'Skip' can be used to not overwrite the current file that has been found to exist on the target drive, but to continue looking to see if there are other files on the target drive that also may already exist on the source drive.

DIGITAL VIDEO RECORDER INSTRUCTIONS

NOTES ON INDIVIDUAL VERSUS GROUP ACTIONS - CONTINUED

The following are descriptions of many of the selections available in the DVR menus. Note that not all selections will be discussed here as some settings should not be changed.

- Playing a video
- Viewing a snapshot
- Individual Copying or Moving of Video or Snapshots from Internal to External or External to Internal
- Individual Deleting of Files from Internal or External
- Group Copying or Moving of Video or Snapshots from Internal to External or External to Internal
- Group Deleting of Files from Internal or External
- Setting the Date and Time
- Setting the Record Storage Device
- Changing the Fast Forward and Fast Rewind video time
- Viewing the amount of space remaining on the flash drives
- Renaming a video or snapshot file
- Formatting a flash drive
- Audio Pass-through

DIGITAL VIDEO RECORDER INSTRUCTIONS

PLAYING VIDEO

With no menu displayed, Press [MENU/OK]. The top level menu is displayed.

```
== Menu ==  
> Play video  
  View snapshots  
  Overlays  
  File management  
  Setup
```

Select Play Video. The Play Video Source menu is displayed.

```
== Play Video Source ==  
> External  
  Internal
```

Select a source (here the operator has selected External). The Play Video : External menu is displayed.

```
== Play Video : External ==  
> 20171017-05.mp4 1.39 MB  
  20171017-04.mp4 2.03 MB  
  20171017-03.mp4 35.9 MB  
  20171017-02.mp4 6.31 MB  
  20171017-01.mp4 8.3 MB  
  20171017-00.mp4 675 KB
```

Note that files are shown in reverse alphabetic order.

Select a video to view and the DVR menu will be cleared from the screen and the video will immediately begin playback. When playback finishes, pressing [MENU/ OK] will return control to the Play Video : External menu so that another video could be selected and viewed.

Press the [STOP/BACK] button once to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

VIEWING SNAPSHOTS

From the top level menu, select View snapshots.

```
== Menu ==
Play video
> View snapshots
Overlays
File management
Setup
```

The View Snapshot Source menu is displayed.

```
== View Snapshot Source ==
> External
Internal
```

Select a source (here the operator has selected External). The View Snapshot : External menu is displayed.

```
== View Snapshot : External ==
> 20171017-05.jpg 20.5 KB
   20171017-04.jpg 21.7 KB
   20171017-03.jpg 20.9 KB
   20171017-02.jpg 20.4 KB
   20171017-01.jpg 20.5 KB
   20171017-00.jpg 20.4 KB
```

Note that files are shown in reverse alphabetic order.

Select a snapshot to view and the DVR menu will be cleared from the screen, the name of the snapshot will be briefly displayed and the snapshot will be displayed. When finished, pressing [MENU/OK] will return control to the View Snapshot : External menu so that another snapshot could be selected and viewed.

Press the [STOP/BACK] button once to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

INDIVIDUAL COPYING OR MOVING OF VIDEO OR SNAPSHOTS FROM INTERNAL TO EXTERNAL OR EXTERNAL TO INTERNAL

Shown here is an example of copying an individual video from internal to external, but all of the other possibilities follow the same pattern.

From the top level menu, select File management.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
> File management  
Setup
```

The File Management menu is displayed.

```
== File Management ==  
Copy video from internal  
Copy video from external  
Copy snapshots from internal  
Copy snapshots from external  
Delete files from internal  
Delete files from external  
Toggle Copy or Move  
> Select files : Individual
```

If the operator prefers to move a video or snapshot, selecting the second-to-last option in this menu 'Toggle Copy or Move' will change the first four selections from saying 'Copy' to 'Move'. Pressing it a second time will revert the selections back to Copy. The difference between Copying and Moving is that after moving, the file will be deleted from the source flash drive.

Select Copy video from internal. The Copy Video from Internal menu is displayed.

```
== Copy Video from Internal ==  
> 20171019-03.mp4 7.8 MB  
20171019-02.mp4 680 KB  
20171010-01.mp4 3.52 MB  
20171019-00.mp4 2.18 MB
```

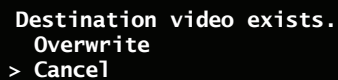

DIGITAL VIDEO RECORDER INSTRUCTIONS

INDIVIDUAL COPYING OR MOVING OF VIDEO OR SNAPSHOTS FROM INTERNAL TO EXTERNAL OR EXTERNAL TO INTERNAL - CONTINUED

Note that files are shown in reverse alphabetic order.

Select a video to copy and if it does not exist on the external flash drive, the Copy Video from Internal menu will be removed and the file will start to be copied, with status message showing the progress as it is copied, e.g. Copying video ... 66.8%. In the case of a Move operation, when copying completes, the file will be deleted from the source drive. When copying completes, the Copy Video from Internal menu is displayed so that another video could be selected and copied.

If however, the video already exists on the external flash drive, the Destination video exists menu will be displayed.



Destination video exists.
Overwrite
> Cancel

The cursor will be positioned on the 'Cancel' selection. To overwrite the file on the external flash drive, move the cursor to Overwrite and select. The file will first be deleted from the external flash and then copying will commence as before.

Press the [STOP/BACK] button twice to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

INDIVIDUAL DELETING OF FILES FROM INTERNAL OR EXTERNAL

Shown here is an example of deleting an individual file from internal, but external follows the same pattern.

From the top level menu, select File management.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
> File management  
Setup
```

The File Management menu is displayed.

```
== File Management ==  
Copy video from internal  
Copy video from external  
Copy snapshots from internal  
Copy snapshots from external  
Delete files from internal  
Delete files from external  
Toggle Copy or Move  
> Select files : Individual
```

Select Delete files from internal. The Delete Files from Internal menu will be displayed. Note that it shows both video files (ending in .mp4) and snapshot files (ending in .jpg). Files are listed in reverse alphabetic order.

```
== Delete Files from Internal ==  
> 20171018-01.mp4 3.63 MB  
20171018-00.mp4 888 KB  
20171017-03.jpg 20.5 KB  
20171017-02.jpg 20.4 KB  
20171017-01.jpg 20.8 KB  
20171017-00.jpg 20.7 KB
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

INDIVIDUAL DELETING OF FILES FROM INTERNAL OR EXTERNAL - CONTINUED

Select the file to delete. The Delete confirm menu will be displayed.

Delete 20171018-01.mp4, confirm?

> Yes
No

The cursor will be on the 'Yes' selection. Select 'Yes' to delete the video or snapshot. There will be a message "Deleting ..." on the screen for a few seconds and then the Delete Files from Internal menu will be displayed so that additional videos or snapshots may be deleted.

Press the [STOP/BACK] button twice to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP COPYING OR MOVING VIDEO OR SNAPSHOTS FROM INTERNAL TO EXTERNAL OR EXTERNAL TO INTERNAL

Shown here is an example of copying a group of videos from internal to external, but all of the other possibilities follow the same pattern.

From the top level menu, select File management.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
> File management  
Setup
```

The File Management menu is displayed.

```
== File Management ==  
Copy video from internal  
Copy video from external  
Copy snapshots from internal  
Copy snapshots from external  
Delete files from internal  
Delete files from external  
Toggle Copy or Move  
> Select files : Individual
```

If the operator prefers to move a group of videos or snapshots, selecting the second-to-last option in this menu 'Toggle Copy or Move' will change the first four selections from saying 'Copy' to 'Move'. Pressing it a second time will revert the selections back to Copy. The difference between Copying and Moving is that after moving, the files will be deleted from the source flash drive.

Select 'Select files'. It will change from 'Individual' to 'Group'.

Select Copy Video from Internal. The Copy Video from Internal menu is displayed. However, unlike when copying individual files, there will be a '[' to the left of each and every file in the list.

```
== Copy Video from Internal ==  
> [ ]20171019-03.mp4 7.8 MB  
[ ]20171019-02.mp4 680 KB  
[ ]20171010-01.mp4 3.52 MB  
[ ]20171019-00.mp4 2.18 MB
```

Note that files are shown in reverse alphabetic order.

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP COPYING OR MOVING VIDEO OR SNAPSHOTS FROM INTERNAL TO EXTERNAL OR EXTERNAL TO INTERNAL - CONTINUED

Select the videos that are to be copied by pressing the MENU/OK at each filename. An 'x' will be drawn inside the brackets - '[x]' to indicate that the file is selected. Selecting a filename that is already selected will unselect it, causing the '[x]' to be changed back to '[']'.

Use the UP arrow and DOWN arrow buttons to navigate through the list(s) of filenames. If desired, the operator may select files across several screens of files.

Once the operator has selected all of the files he wishes to copy, he presses either the [STOP/BACK] button or the LEFT arrow to move to the Files Selected menu:

```
== 4 files selected ==
> Copy files
  Change selection
  Cancel
```

Selecting 'Change Selection' will move the operator back to the Copy Video from Internal menu where he can continue selecting or unselecting files to copy. Note that anything that he previously selected will still be selected.

Selecting 'Cancel' will return the operator to the File Management menu and any files that he previously selected will be unselected the next time he enters the Copy Video from Internal menu.

Selecting Copy files will begin the group copying. The DVR-USB will check the target drive to see if there are files existing with the same name as the files about to be copied, starting with the earliest name alphabetically.

If there is at least one file existing with the same name, the Already Exists menu will be displayed:

```
== 20171019-00.mp4 already exists ==
> Overwrite
  Overwrite all
  Skip
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP COPYING OR MOVING VIDEO OR SNAPSHOTS FROM INTERNAL TO EXTERNAL OR EXTERNAL TO INTERNAL - CONTINUED

Selecting 'Overwrite' will inform the system that the operator wishes to overwrite this particular file and will make a decision on further files that already exist.

Selecting 'Overwrite all' will make it so that the current and any subsequent files found to exist on the target drive will be overwritten without the operator having to decide separately.

Selecting 'Skip' can be used to leave alone the current file that has been found to exist on the target drive, but to continue looking to see if there are other files on the target drive that also may already exist on the source drive.

If 'Overwrite' or 'Skip' is selected the system will continue processing through the target files alphabetically looking for additional files that match the ones being copied. For each one that is found, the 'Already Exists' menu will be displayed and the operator will again have an opportunity to 'Overwrite', 'Overwrite all' or 'Skip'.

Once the operator has made it through the entire list of files that match the ones being copied, or alternately, at some point selected 'Overwrite all', or there weren't any files that matched the ones being copied, the system will commence the copy operation. Note that depending on the number of files chosen, and the size of those files, this can take a considerable amount of time.

The files are copied in reverse alphabetic order. As the files are being copied, the DVR-USB will display the filename being copied and also update the progress by showing the approximate percentage that the operation has completed, e.g. Copying video ... 66.8%.. In the case of a move operation, the files are then deleted from the source drive.

If the operator doesn't wish to copy any files at all or at least not the particular group of files selected, he can press the [STOP/BACK] button any time while at the Already Exists menu, to return to the Copy Video from Internal menu where he can again modify the list of files to be selected.

Pressing the [STOP/BACK] button from the Files Selected menu will return to the File Management menu.

When copying completes, the File Management menu is displayed. Press the [STOP/BACK] button once to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP DELETING FILES FROM INTERNAL OR EXTERNAL

Shown here is an example of deleting a group of files from internal, but deleting a group from external follows the same pattern.

From the top level menu, select File management.

```
== Menu ==
Play video
View snapshots
Overlays
> File management
Setup
```

The File Management menu is displayed.

```
== File Management ==
Copy video from internal
Copy video from external
Copy snapshots from internal
Copy snapshots from external
Delete files from internal
Delete files from external
Toggle Copy or Move
> Select files : Individual
```

Select 'Select files'. It will change from 'Individual' to 'Group'.

Select Delete Files from Internal. The Delete Files from Internal menu is displayed. However, unlike when deleting individual files, there will be a '[' to the left of each and every file in the list.

```
== Delete files from internal ==
> [ ]20171019-03.mp4 7.8 MB
[ ]20171019-02.mp4 680 KB
[ ]20171010-01.mp4 3.52 MB
[ ]20171019-00.mp4 2.18 MB
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP DELETING FILES FROM INTERNAL OR EXTERNAL - CONTINUED

Note that it shows both video files (ending in .mp4) and snapshot files (ending in .jpg). Files are listed in reverse alphabetic order.

Select the videos or snapshots that are to be deleted by pressing the Menu/OK at each filename. An 'x' will be drawn inside the brackets - '[x]' to indicate that the file is selected. Selecting a filename that is already selected will unselect it, causing the '[x]' to be changed back to '['.

Use the UP arrow and DOWN arrow buttons to navigate through the list(s) of filenames. If desired, the operator may select files across several screens of files.

Once the operator has selected all of the files he wishes to copy, he presses the [STOP/BACK] button or LEFT arrow to move to the Files Selected menu:

```
== 4 files selected ==  
> Delete files  
  Change selection  
  Cancel
```

Selecting 'Change Selection' will move the operator back to the Delete Files from internal menu where he can continue selecting or unselecting files to delete. Note that anything that he previously selected will still be selected.

Selecting 'Cancel' will return the operator to the File Management menu and any files that he previously selected will be unselected the next time he enters the Delete Files from Internal menu.

Selecting Delete files will begin the group deleting. Regardless of how many files are chosen, or their sizes, this goes very quickly.

DIGITAL VIDEO RECORDER INSTRUCTIONS

GROUP DELETING FILES FROM INTERNAL OR EXTERNAL - CONTINUED

The files are deleted in reverse alphabetic order. As the files are being deleted, the DVR-USB will display the filename being deleted and also update the progress by showing the approximate percentage that the operation has completed, e.g. Deleting file ... 66.8%..

When deleting completes, the File Management menu is displayed. Press the [STOP/BACK] button once to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE DATE AND TIME

From the top level menu, select Setup.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
File management  
> Setup
```

The Setup menu will be displayed.

```
== Setup ==  
> Set Date/Time 2017-10-17 4:54 PM  
Video  
Audio  
Record Storage Device : External  
System Information  
Turn WiFi on
```

To set either the date or time, all of the following fields must be set – year, month, day, hour, minute and AM/PM.

Date and time always appear as YYYY-MM-DD HH:MM AM/PM although one fewer character is used when the hour is < 10.

Select Date/Time ... where ‘...’ represents the date and time the system currently holds. The Set Year menu is displayed.

```
== Set Year ==  
2016  
> 2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025  
2026  
2027  
2028  
2029
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE DATE AND TIME - CONTINUED

Select the current year and the Set Month menu is displayed.

```
== Set Month ==  
January  
February  
March  
April  
May  
June  
July  
August  
September  
> October  
November  
December
```

Select the current month and the Set Day subrange menu is displayed.

```
== Set Day ==  
1-9  
> 10-19  
20-29  
30-31
```

Select the desired range of days and Set Day menu is displayed.

```
== Set Day ==  
10  
11  
12  
13  
14  
15  
16  
> 17  
18  
19
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE DATE AND TIME - CONTINUED

Select the current day and the Set Hour menu is displayed.

```
== Set Hour ==  
1  
2  
3  
> 4  
5  
6  
7  
8  
9  
10  
11  
12
```

Select the current hour and the Set Minute subrange menu is displayed.

```
== Set Minute ==  
00-09  
10-19  
20-29  
> 30-39  
40-49  
50-59
```

Select the desired subrange and the Set Minute menu is displayed.

```
== Set Minute ==  
30  
31  
32  
33  
34  
35  
36  
37  
38  
> 39
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE DATE AND TIME - CONTINUED

Select the current minute and the Set AM/PM menu is displayed.

```
== Set AM/PM ==  
  AM  
> PM
```

Select the current AM/PM and the new date and time will be set and the operator will be moved all the way back to the Setup menu, showing the new date and time.

```
== Setup ==  
> Set Date/Time  2017-10-17 4:39 PM  
  Video  
  Audio  
  Record Storage Device : External  
  System Information  
  Turn WiFi on
```

Press the [STOP/BACK] button once to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE RECORD STORAGE DEVICE

From the top level menu, select Setup.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
File management  
> Setup
```

The Setup menu will be displayed.

```
== Setup ==  
Set Date/Time 2017-10-17 4:54 PM  
Video  
Audio  
> Record Storage Device : Internal  
System Information  
Turn WiFi on
```

Select Record Storage Device : Internal (it may be set to something else).

The Setup Recording Storage menu will be displayed.

```
== Setup Recording Storage ==  
Both  
Internal  
> External  
Prompt
```

Select the desired Recording Storage. In the example shown here, External is chosen. The menu will change back to the Select Record Storage, indicating the change:

```
== Setup ==  
Set Date/Time 2017-10-17 4:54 PM  
Video  
Audio  
> Record Storage Device : External  
System Information  
Turn WiFi on
```

DIGITAL VIDEO RECORDER INSTRUCTIONS

SETTING THE RECORD STORAGE DEVICE - CONTINUED

If the Record Storage Device is set to 'Prompt', any time that the operator presses the [Record] or [Snapshot button], he will first be presented with the Recording Storage Device menu.

```
== Recording Storage Device ==  
> External  
  Internal  
  Both
```

The operator selects one of those three selections and the snapshot or video proceeds, storing to the device or devices selected.

DIGITAL VIDEO RECORDER INSTRUCTIONS

CHANGING THE FAST FORWARD AND FAST REWIND VIDEO TIME

From the top level menu, select Setup.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
File management  
> Setup
```

The Setup menu will be displayed.

```
== Setup ==  
Set Date/Time 2017-10-17 4:54 PM  
> Video  
Audio  
Record Storage Device : Internal  
System Information  
Turn WiFi on
```

Select Video and the Setup Video menu will be displayed.

```
== Setup Video ==  
Video Standard : NTSC  
Interpolate : On  
Video Bit Rate: 3500kbps  
> Playback Seek : 10  
Snapshot Quality: 90  
Snapshot Overlay : On  
Recording at Power-on : Off
```


DIGITAL VIDEO RECORDER INSTRUCTIONS

CHANGING THE FAST FORWARD AND FAST REWIND VIDEO TIME - CONTINUED

Select Playback Seek and the Playback Seek Amount [seconds] menu will be displayed.

```

== Playback Seek Amount (seconds)
Continuous
> 10
  20
  30
  40
  50
  60
  70
  80
  90
 100
 110
 120
  
```

Select the number of seconds that the fast forward and fast rewind buttons should move the video with each press. In this example, it's been set to 20.

Selecting 'Continuous' will put it into a mode whereby when viewing a video, pressing the RIGHT ARROW or LEFT ARROW button will then continuously fast forward or fast rewind until a second pressing of that same button causes it to return it to normal speed. Use this setting if needing to move quickly through a very large video file.

The menu will change back to the Setup Video showing the changed value.

```

== Setup Video ==
Video Standard : NTSC
Interpolate : On
Video Bit Rate: 3500kbps
> Playback Seek : 20
Snapshot Quality: 90
Snapshot Overlay : On
Recording at Power-on : Off
  
```

Press the [STOP/BACK] button twice times to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

VIEWING THE AMOUNT OF SPACE REMAINING ON THE FLASH DRIVES

From the top level menu, select Setup.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
File management  
> Setup
```

The Setup menu will be displayed.

```
== Setup ==  
Set Date/Time 2017-10-17 4:54 PM  
> Video  
Audio  
Record Storage Device : Internal  
System Information  
Turn WiFi on
```

Select System Information and the System Information menu will be displayed.

```
== System Information ==  
> Serial Number : 8095903  
Firmware Ver: 1724  
Bootloader Ver : 1724  
Internal: 124 GB 120 GB free  
External: 15.4 GB. 15.2 GB free
```

The last two lines show the amount of available space on the internal and external drives.

Press the [STOP/BACK] button twice to return to the main menu.

DIGITAL VIDEO RECORDER INSTRUCTIONS

RENAMING A VIDEO OR SNAPSHOT FILE

Plug a USB keyboard into one of the two external USB ports. For everything in this section, use the USB keyboard. It should have UP arrow and DOWN arrow keys for moving through menus. Use the <ENTER> key on the USB keyboard to make a selection, or to bring up the top level menu. Use the <ESC> key to move back a menu.

From the top level menu, select File management.

```
== Menu ==  
Play video  
View snapshots  
Overlays  
> File management  
Setup
```

The File Management menu will be displayed.

```
== File Management ==  
Copy video from internal  
Copy video from external  
Copy snapshots from internal  
Copy snapshots from external  
Delete files from internal  
Delete files from external  
> Rename files from internal  
Rename files from external  
Toggle Copy or Move
```

Note that there will be two selections previously not available:

Rename files from internal
and
Rename files from external

If there is not a flash drive in one of the external USB ports, all of the selections with the word 'external' will not be shown, or the selections with 'Copy', or the 'Toggle Copy or Move' selection.

DIGITAL VIDEO RECORDER INSTRUCTIONS

RENAMING A VIDEO OR SNAPSHOT FILE - CONTINUED

Select Rename files from internal. The Rename file on Internal menu will be displayed.

```
== Rename files from Internal ==  
> 20171018-01.mp4 3.63 MB  
   20171018-00.mp4 888 KB  
   20171017-03.jpg 20.5 KB  
   20171017-02.jpg 20.4 KB  
   20171017-01.jpg 20.8 KB  
   20171017-00.jpg 20.7 KB
```

Select the file that is to be renamed. The Please enter filename menu will be displayed.

```
== Please enter filename ==  
> 20171018-01.mp4|
```

A flashing '|' cursor will appear after the file extension (.mp4 or .jpg). On the USB keyboard use the backspace key and any alphanumeric keys to rename the file to a new name. The extension need not be added, but can be. Press <ENTER> on the USB keyboard once the operator has finished inputting the new name. The Rename files on Internal menu will be redisplayed, with the new name. Depending on what name was provided, it may be listed in a different position in the menu, or even not appear in this menu since the menu is always displayed in reverse alphabetical order. The filename can be up to 40 characters, but Cues would strongly recommend against this as the list will not display more than 32 characters on a line and even then, that will cause the file size not to be shown. Realistically, about 18 characters prior to the file extension will fit without a problem.

```
== Rename files from Internal ==  
> anewname.mp4 3.63 MB  
   20171018-00.mp4 888 KB  
   20171017-03.jpg 20.5 KB  
   20171017-02.jpg 20.4 KB  
   20171017-01.jpg 20.8 KB  
   20171017-00.jpg 20.7 KB
```

Press the [ESC] button on the USB keyboard twice to return to the main menu. Unplug the USB keyboard when the operator is finished renaming.

DIGITAL VIDEO RECORDER INSTRUCTIONS

FORMATTING A FLASH DRIVE

From the top level menu, select Setup.

```
== Menu ==
Play video
View snapshots
Overlays
File management
> Setup
```

The Setup menu will be displayed.

```
== Setup ==
Set Date/Time 2017-10-17 4:54 PM
Video
Audio
Record Storage Device : Internal
> System Information
Turn WiFi on
```

Select System Information and the System Information menu will be displayed.

```
== System Information ==
Serial Number : 8095903
Firmware Ver: 1724
Bootloader Ver : 1724
Internal: 124 GB 120 GB free
> External: Unsupported Format
```

Select External: Unsupported Format and the Format External menu will be displayed.

```
Format External. Confirm?
Yes.  ERASE EVERYTHING on External
> No
```

The default for this menu is 'No'. If certain it's okay to format this flash drive, move the cursor to 'Yes' and select it. Everything on the flash drive will be erased. There will be a message displayed while formatting,

Formatting External, please wait ...

DIGITAL VIDEO RECORDER INSTRUCTIONS

FORMATTING A FLASH DRIVE - CONTINUED

Once the formatting completes, there will be a message "External Storage Inserted" and the screen will now show the new flash drive:

```
== System Information ==  
Serial Number : 8095903  
Firmware Ver: 1724  
Bootloader Ver : 1724  
Internal: 124 GB 120 GB free  
> External: 15.99 GB 15.99 GB free
```

AUDIO PASS-THROUGH

The system defaults to passing through the audio which means that audio input through the microphone/handheld will also come out the speaker, including during recording. This can be changed through the Setup Audio menu, available by selecting 'Audio' from the 'Setup' menu.

The Setup Audio Menu looks like:

```
== Setup Audio ==  
> Audio volume : 0  
Audio AGC : Off  
Mute recording at start: Unmute  
Audio input: Line  
Playback Volume :10  
Audio passthru: Enabled
```

DVR-USB FYI

1. What is the DVR-USB?
The DVR-USB is a digital video recorder (DVR) that records and plays back video directly to up to two USB flash drives.
2. Can I take still images with the DVR-USB?
Yes.
3. Can I take still images while recording?
Yes.
4. Can I playback still images while recording?
No.
5. What is the minimum recording allowed?
There is no minimum.
6. Can I record audio?
Yes. The specifics of turning on the microphone and whether there is a visual cue of the microphone are described in the specific product manual.
7. Does the DVR-USB have a hard drive?
No. The video/audio processing is 100% solid state with video/audio files saved to up to two different USB flash drives.
8. How do I access the USB flash?
The external USB flash is inserted and removed through a slot in the product's control unit. A second, internal USB flash is permanently inside the product's control unit.
9. What are the recording times on the different mode settings?
Approximately 12 hours of high definition video may be stored on the 16GB external USB flash drive.
10. Can the files stored in the product's flash drives be accessed directly with a PC?
No. The external USB flash drive may be removed from the product and inserted into a USB slot on a PC in order to copy files off of it.

DVR-USB FYI

11. What is required to view the videos on my office computer?
The files are in .mp4 format and can be viewed with most any standard media player.
12. What happens if I remove the external USB flash drive while the DVR-USB is recording?
Loss of files can result. Warning: While recording, do not remove the external USB flash drive from the DVR-USB or power the unit down.
13. How are the video files named?
The recordings are stored in the DCIM directory located in the root of the USB flash drive. If this directory does not yet exist on the USB flash drive, it will be automatically created when the card is first installed in the DVR. The snapshot files are named as follows:

YYYYMMDD-xx.jpg
where xx is the number of the snapshots taken on that given day, 00 being the first, 01 being the second, etc.

The video files are named:
YYYYMMDD-xx.mp4
where xx is the number of the video taken on that given day, 00 being the first, 01 being the second, etc.

If more than 100 videos are recorded or snapshots taken, there will be 3 digits use, e.g. 109
14. How do I keep the USB flash drive from filling up?
It is recommended that the video files are moved to an office PC to a named directory on that computer each time the USB flash drive is emptied. In Windows, create a directory, for example: Main Street Inspections. Move the files from the USB flash drive to this directory. Each time videos are moved from the USB flash drive, a new directory should be created for that inspection, place, date, etc.

This Record of Revision page is designed to allow the manual user to determine the engineering/manufacturing level to which the manual is written. As engineering changes to this hardware are made at CUES, necessary information in the manual will be revised to reflect those changes. The latest change level and the rationale for any change(s) will be explained in tabular format on this page to allow the manual user to be better equipped should the need arise to call CUES regarding technical information.

ORIGINAL MANUAL	REVISION	CHANGE DESCRIPTION
EC2978-APP	01.20.2018	Initial preliminary release
	02.22.2018	Bugs were fixed and features were added to the Sensoray DVR; appendix required updating to reflect these changes.
	03.07.2018	Internal and external storage instructions were modified.
	03.27.2018	Numerous procedural additions/changes made due to DVR-USB firmware upgrade.

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of using a wide variety of grouting products. **CUES** also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser for Sonar based systems.

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