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USER-007 REV F

DartEye2

USER GUIDE

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The system is not earthed. If mains operated equipment is connected to the system then the external equipment must be earthed.

Do not use the DartEye System in potentially explosive environments. This equipment is not approved for use in hazardous environments.

Drain Cameras are heavy. Always use the wheels to aid transport. Observe heavy lifting practices when lifting the System.

Foul water can be a source of biological hazards. Wear appropriate protection at all times.

The camera head will get hot during use, this is normal. Take care when handling the camera at all times.

THE MONITOR

FIG 1

1. On / Off Switch
2. Keyboard Monitor
3. Controls
4. Recording Controls (uses keyboard) Reel
5. (Camera) Connector
6. AC Adaptor Input

7. Video out
8. USB Card Slot
9. Battery Status Indicator
10. Sonde Switch – Switches Sonde off / on
11. Light Control

THE REEL

FIG 2

1. Push rod Reel – Available in 60 or 120 Mtr Lengths
2. Rod Guide – Guides the rod on and off the reel
3. Brake – Push/Pull mechanism to lock the reel
4. Sonde 33 KHz
5. Camera 54mm Diameter Self Levelling

The monitor is secured to the frame by aligning the two posts on the frame with the underside of the monitor case and inserting the locating pin on the frame into the securing hole on the underside of the monitor case.

To remove the monitor from the frame, grasp the closed monitor on each side and pull from one side, this will release the internal spring catch that secures the monitor.

Attach the frame interconnect cable connector to the monitor via the connector [fig1(5)].

Check the battery level by pressing and holding Battery Status Indicator [fig1(9)], each illuminated segment represents 20% battery life remaining.

SWITCH ON
Turn the system on using the power switch located at (fig1(1)).

BRAKE
Release the brake to allow the camera and cable to be withdrawn from the unit. The brake mechanism is spring plunger. Pull and twist the plunger to release the brake and leave the brake in the off position.
Twist the plunger to apply the brake, the cage will continue to rotate until the plunger locates the next hole in the cage wheel and secures itself.

LIGHTS
The lights on the camera head are controlled by the rotary switch on the monitor at (Fig1(11)), the unit is set up to operate in 4 – 6" pipes with the light control set to half on. This is the optimum set up for light output and battery life. The screen will also "auto-balance" itself if the light intensity is turned up so controlling the amount of glare seen on the screen.

SONDE
The unit is fitted with a 33Khz location transmitter (Sonde). To turn the Sonde on press the Sonde button (fig1(10)), to turn the Sonde off press the button again. When the Sonde is operating a green LED will be illuminated. The image is turned off whilst the Sonde is transmitting, due to interference caused by the high signal strength.

DISTANCE COUNTER

The on-screen distance counter provides an estimate of how much rod has been deployed, which can be used to establish the position of the camera head. The cable counter can be reset to zero at any time to give a relative distance count from a certain point by pressing F6 on the keyboard, the text "Encoder 1 reset" will appear on the screen and the measurement shown at the bottom left of the screen will now show 0.00m.

KEYBOARD OPERATIONS

Key	Menu Item
Enter, Space	Menu
F2	Menu
Escape	Stop
R	Record / Pause
S	Snapshot (screenshot)
P	Pause toggle
M	Mute toggle
F	Fast Forward (by an increment)
D	Rewind (by an increment)
T	Title overlay toggle
E	Extra overlay page
A	Additional overlay page
C	Coded overlay page
F6	Resets the Distance Counter

RECORDING

R	Press R on the keyboard to start recording
P	Press P on the keyboard to pause recording
Esc	Press Esc to stop recording

SCREEN OVERLAYS / TEXT

CUSTOM TEXT OVERLAYS

Insert USB in to the DartEye2 before turning on.

TO CREATE TITLE OVERLAY

Press **SPACE** to enter menu, down to **overlay**, then down to **setup title overlay.** Press **ENTER** on **edit text**. Type in your title and press **Esc**. Scroll down to **save** and hit **ENTER**. Your title overlay is now saved to your USB storage device.

TO SHOW TITLE OVERLAY

Press **T** to show the title overlay, and **Esc** to exit edit mode. To clear the screen press **T** again.

TO SHOW EXTRA OVERLAY (Eg. ADDRESS)

Press **E** and a second free text page (eg. Job address) opens allowing the page to be edited. Once complete press the **Esc** key and the page is saved and will appear on the screen in the format it has been saved in.

To clear the screen press **E** again.

TO SHOW ADDITIONAL OVERLAY

Same as Extra Overlay, but using the **A** key instead.

TO SHOW CODES

Press **C** and the sentence "`Enter Code:`" appears. If the code is known this can be entered here or press the **Enter** key and the list of pre-set codes will appear.

```
CL Crack Longitudinal
CC Crack Circumferential
CM Cracks Multiple
FL Fracture Longitudinal
FC Fracture Circumferential
FM Fractures Multiple
```

Use the up and down arrow keys to select the required code and press enter. The selected code narrative will appear on the screen. Press **C** again and the text will be removed.

DO NOT CHANGE/EDIT PRIMARY OVERLAY.

MENU OPTIONS

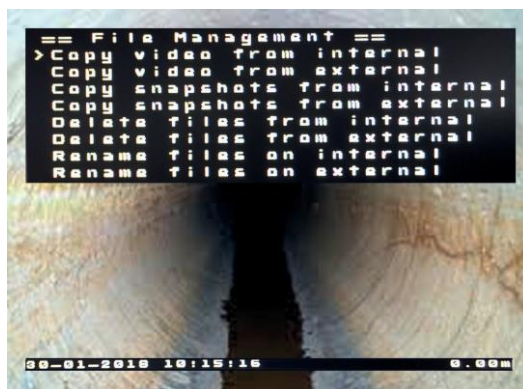To bring up the list of menu options press the **space bar** or **F2**.

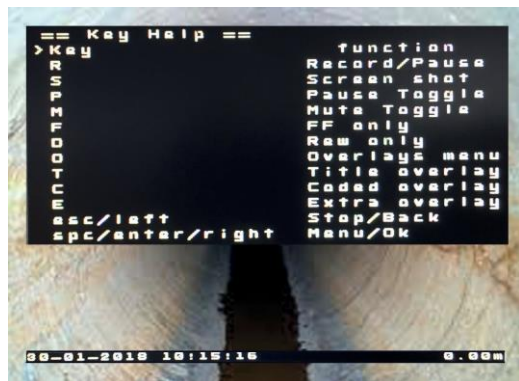### Top

Play

View

File management

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Help with

Play video

Plays video (.mp4) recordings stored on the media. Selecting "`Play video`" brings the next menu level:

```
==Play video source==
Internal
External
```

Selections are displayed if both internal and external storage devices are present. If only one is present, the files list is displayed. File selection is made using the arrow keys.

Pressing **OK/Enter** starts playback. **Escape** or **Stop** terminates the playback.

View snapshots

Displays snapshots (.jpg) recordings stored on the media. Behaviour is similar to "`Play video`".

File management

Selecting "`File management`" brings up the following selections:

```
Copy video from internal
Copy video from external
Copy snapshots from internal
Copy snapshots from external
Delete files from internal
Delete files from external
```

Some of the choices may not be present depending
on the number of storage devices connected.

NOTE: THE FOLLOWING SECTION SHOULD NOT BE CHANGED WITHOUT FULLY UNDERSTANDING THE IMPLICATIONS.

Setup

Selecting "`Setup`" brings up the next

Set Date/Time

Allows setting the battery backed-up real-time clock. The real-time clock is used to automatically generate file names for saved video files and snapshots. There is also an option of having the date/time text overlay present in recorded video and snapshots.

Video

Brings up Video setup menu:

`==Setup Video==`

Video Standard

Allows selection between NTSC and PAL.

Interpolate

Turning interpolation **ON** gets rid of motion artifacts at an expense of some vertical resolution loss.

Video Bit Rate

Determines the compression level of recorded video. The higher the bit rate, the higher the quality, the more space is required on the storage device.

Playback Seek

Adjusts the amount of time skipped when using Rewind and Fast Forward functions.

Snapshot quality

Adjusts the compression level of JPEG snapshots. The higher the setting, the higher the quality and the larger the file size.

Recording at power-on

When set to ON recording starts automatically once the board is powered on with approximately 20-30 second boot delay.

Audio

Brings up Audio setup menu:

`==Setup Audio==`

Audio Volume

Adjusts input volume. The higher the value the louder the recorded audio is.

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Mute Recording at Start

Selecting "**On**" disables audio recording each time recording is started. Audio recording can be enabled and disabled while recording is in progress by pressing the "**M**" key on the keyboard, or a corresponding key on the keypad.

Audio Input

Selects between microphone and line. Note that available type of input depends on the model and assembly option of the board.

Playback Volume

Adjusts audio playback volume.

Overlays

DO NOT CHANGE PRIMARY OVERLAY

Brings up Overlay menu:

```
==Overlays==
```

Text Display

Turns the overlay text on or off. Allows selecting one of 2 font sizes.

Text

Brings up Select Overlay Text menu

```
==Select Overlay Text==
```

This menu allows selection of text to be displayed on top of live and recorded video

The following conventions are used:

^d – current date;

^t – current time;

^e – encoder #1 data;

^f – encoder #2 data.

Currently selected length unit (m or ft) is displayed for each encoder.

Units are selected in **Rotary Encoders** menu (see below).

Custom text

Allows entry of up to 5 custom strings for an overlay. Only one of five is displayed at any given time.

Date Format

Allows selection of various date formats for date overlay.

Time Format

Allows selection of various time formats for time overlay.

Background

Selects background transparency for overlays.

Move...

Moves the overlay box across the screen in selected direction.

Record Storage Device

Allows selecting device(s) that video and snapshots are recorded to: internal, external or both. If "**Prompt**" option is selected the user is prompted each time a recording is started.

POWER SUPPLY / BATTERY

The system is supplied with a mains power adapter. The adapter should be plugged into and secured to the socket on the side of the monitor (fig1 (6)). The system can be run from a mains supply or from the internal Lithium Ion Battery Pack. When the unit

is connected to mains supply the system can be operated and the battery will be recharged at the same time if required,

To recharge the battery only connect the power supply to the monitor whilst the unit is turned off.

Battery charge can be identified by pressing and holding the battery status indicator (fig1 (9)).

TIPS

Always remove debris and objects from the pipe where possible, before inspection. The camera is designed to inspect pipes not to clear blockages.

The battery will last @ 6 hours on one charge however this will reduce if using the WiFi function. It is advised to switch off WiFi if you do not need to use it to conserve battery power.

It is advised to clean down the unit each day after use, this will ensure the unit lasts longer and is also an opportunity to inspect the unit for damage etc.

CHANGING MEASUREMENTS FROM METERS TO FEET

1. Press F2 to enter the menu
2. Select *"Setup"*
3. Select *"Rotary Encoders"*
4. Enter *"Encoder 1"*
5. Select *"Units"* and then choose between meters or feet, then hit **Enter**
6. Press **Esc** to go back to the top level menu
7. Select *"Overlays"*
8. Select *"Primary Overlays"*
9. Select *"Setup Primary Overlay"*
10. Select *"Custom Text"*
11. Select *"Custom Text 1"*
12. Change the *"m"* for an *"ft"* depending on what units you are using, then hit **Enter**
13. Press **Esc** to clear the menu

CONNECTING TO THE WIFI

1. To use WiFi on the DartEye2 Drain Camera you will need to first download one of the following Apps from the iPhone/Android phone Download store:-

MyTana Viewer   **or**   VLC Player

2. To turn on the **WiFi** setting on the DartEye2 press **F2**, this brings up the **MENU**.
3. Use the **DOWN** Arrow to highlight **SETUP** and press **ENTER**
4. Use the **DOWN** Arrow to highlight **Turn WiFi ON/OFF** and press **ENTER**.
5. The DartEye2 is now emitting a WiFi signal.
6. On your iPhone/Android phone go into your WiFi Settings and select **s4011** from the list. (you may get a message saying no internet connectivity, this is normal and should be ignored).
7. Open the relevant App and enter the following RTSP address.
rtsp://192.168.0.100:554/0 (MyTana is already setup on iPhone).
8. You are now connected to the DartEye2 through WiFi.

N.B. It is recommended that if you are not using the WiFi function the WiFi should be disabled in the **SETUP** menu. This can be enabled at any time but will save battery power if disabled when not in use.

SPECIFICATIONS

CAMERA

Exposure Control	Electronic
Lens	F3.6 (fixed)
Mode	Colour
Sensor	¼" PAL CMOS
Resolution	640 x 480
Sensitivity	<0.025 LUX
Illumination	3 x 1watt LEDs
Waterproof Capacity	IP68 to 11 bar

LCD

LCD Size	10.0inch (Diagonal)
Driver Element	TFT active matrix
Resolution	800 x 600
Display Mode	Normally White
Dot Pitch	0.264(H) x 0.264(V)
Active Area	211.2(H) x 158.4(V)

DV

Recorded File Format	MP4
Frame Rate	PAL 25 f/s
Resolution	D1:
Compression Format (Snapshot)	JPEG
Video Compression	H264 High Profile at Level 3
Working Mode	Recording/Snapshot
Memory	(Internal 64GB) (External 8GB)

SYSTEM

Power Supply	Battery Lithium 11.1V 8800maH or 15v AC Adapter
Voltage	12V DC
Power Consumption	≤1200mA
Operating Temperature	-10 to +55°C