



# AXIOM – 3G

## HAND HELD 3G/HD/SD SERIAL DIGITAL GENERATOR OPERATOR'S HANDBOOK

### ISSUE A

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IN CORRESPONDENCE CONCERNING THIS INSTRUMENT  
PLEASE QUOTE THE SERIAL NUMBER PRINTED ON THE  
LABEL AT THE REAR OF THE UNIT

## GENERAL INFORMATION

### WARRANTY

This product is manufactured by Hamlet Video International Ltd and is warranted to be free from defects in components and factory workmanship under normal use and service for a period of one year from the date of purchase.

### FREE EXTENDED WARRANTY

The warranty period can be extended to two years by registering the instrument on the Hamlet web site <http://www.hamlet.co.uk/serv.html>

### TERMS AND CONDITIONS

During the warranty period, Hamlet Video International Ltd will undertake to repair or at its option, replace this product at no charge to its owner when failing to perform as specified, provided the unit is returned shipping prepaid, to the factory or authorised service facility.

No other warranty is expressed or implied. Warranty shall not be applicable and be void when this product is subjected to:

1. Repair work or alteration by persons other than those authorised by Hamlet Video International Ltd in such a manner as to injure the performance, stability, reliability or safety of this product.
2. Misuse, negligence, accident, act of God, war or civil insurrection.
3. Connection, installation, adjustment or use otherwise than in accordance with the instructions in this manual.

Hamlet Video International Ltd reserves the right to alter specifications without notice. This warranty does not affect the statutory rights of the UK customer.

## GENERAL INFORMATION

### SAFETY COMPLIANCE

This product is manufactured and tested to comply with **BS EN 61010-1 : 1993**  
Safety requirements for electrical equipment for measurement, control and laboratory use.



### EMC COMPLIANCE

We, Hamlet Video International Limited, Maple House, 11 Corinium Business Centre, Raans Road, Amersham, Bucks, HP6 6FB, England, declare under our sole responsibility that the product **HAMLET AXIOM** to which this declaration relates is in conformity with the following standards:

**EN50081-1** Generic emissions standard for light industrial applications.

**EN50082-1** Generic immunity standard for light industrial applications.

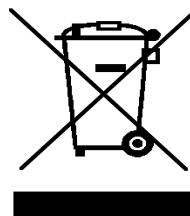
Following the provisions of EU EMC directives 89/336/EEC and 92/31/EEC.

**NOTE.** During the EMC certification of this product, shielded cables were used.  
We recommend that they be used in operation.

### PRODUCT DISPOSAL INSTRUCTIONS

**B2B COMPLIANCE REG NO.**

**WEE/GJ0146QT**



The symbol shown above and on the Hamlet Axiom means the product is classed as Electrical or Electronic Equipment and should not be disposed with other commercial waste at the end of its working life. The Producer Registration Number above, WEE/GJ0146QT proves that Hamlet are formally registered with a legally approved Compliance Scheme. The Scheme we are registered with is called "B2B Compliance".

B2B Compliance takes on the legal responsibilities of the reporting on, and the collection and treatment of, all WEEE that Hamlet Video International Limited is obliged for - and ensures that the appropriate recycling targets are met on this WEEE

The Waste of Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been put in place to recycle products using best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid the increasing landfill.

### Product disposal instructions for business users.

Business users in the EU should contact their Hamlet Axiom supplier to arrange for its return to Hamlet head office in the UK, who will safely dispose of it and ensure that this Hamlet Axiom is not mixed with other commercial waste for disposal.

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## Benefits of the AXIOM-3G

**Future Proof** – AXIOM-3G generates test signals for all single link serial digital video standards, including the new 3 Gbs.

**True Portability** – Fits in the palm of your hand and can be operated from three AA batteries.

**Convenience** – The AXIOM-3G goes anywhere in the included protective leather holster, and is powered by common AA batteries that can be purchased virtually anywhere in the world. A universal Ac power adapter is also included.

**User Friendly** – The onboard colour LCD/TFT is used for all operation functions and displays the selected test signal. Operation is via four navigation buttons on the front panel.

**Complexity Made Easy** – Audio can have independent tone signals and patterns for each of sixteen channels. Video test signals include moving zone plates and pathological test patterns.

## Description

The AXIOM-3G is a portable hand-held video signal and audio test tone generator featuring a 3-Gbs SDI output that generates all video formats from 480i to 1080p-60 with a selection of sixteen different audio test tones. The unit features two outputs on BNC connectors, a color display with button/OSD menu selection, is powered using standard AA batteries or an AC adaptor, and is encased in a mechanically robust enclosure.

Thirty-seven video test signals are available and sixteen channels of audio test tones can be embedded into the selected video test signal. Audio tones are adjustable on a per-channel basis from 1 Hz to 20 kHz with the ability to select a broken tone pattern left, right or both channels for each pair. A carry case with belt clip is included with the unit.

## Features

- Palm sized 3-Gbs Serial Digital video test generator.
- Simple operation with on-screen menus.
- Battery or AC power. Uses standard AA batteries.
- Thirty-seven video test patterns, including four moving and four static zoneplates.
- Eight stereo pairs of embedded audio in four groups.
- Audio resolution is 24-bit for HD signals and 20-bit for SD.
- Adjustable audio tone frequency of 1 Hz to 20 kHz in steps of 1, 10, 100, or 1000 Hz.
- Selectable audio broken tone for left, right, or both channels of each stereo pair.
- Twenty characters of user defined text may be inserted for signal ID.
- Standard definition signals include error detection and handling (EDH).
- User defined default setup stored in non-volatile flash memory.
- Power saver function for battery operation
- Screen saver function.

# Specifications

|                                |  |
|--------------------------------|--|
| Signal Output:                 | 270 Mbs to 3 Gbs via 2 high definition BNC connections   |
| Signal Amplitude:              | > 800 mV   |
| Standards:                     | SMPTE-125M/259M/267M/272M/274M/292M/296M/424M; ITU-R BT.601/656/709-5  |
| Audio Channels:                | AES / 4 groups / 8 pairs / 16 channels   |
| Audio Tone:                    | 10 Hz to 20 kHz, adjustable in increments of 1, 10, 100, 1000 Hz   |
| Audio Resolution               | SD = 20-bit, HD = 24-bit   |
| Audio Amplitude:               | 0 to -100 dBFS   |
| Audio Pattern:                 | Steady or broken tone selectable for left, right, or both of each AES pair   |
| On Screen Text:                | 20 characters / one line / lower third placement   |
| Video Sample Rate:             | 10-bit   |
| Video Formats:                 | Data Rate: 270 Mbs SD 720 x 480i59.94; 720 x 576i50;<br>Data Rate: 1.485 Gbs<br>HD 1920 x 1080i 60 Hz/59.95 Hz/50 Hz<br>HD 1920 x 1080psf 30 Hz/29.97 Hz/25 Hz/24 Hz/23.98 Hz/29.97 Hz<br>HD 1920 x 1080p 30 Hz/29.97 Hz/25 Hz/24 Hz/23.98 Hz/29.97 Hz<br>HD 1280 x 720p 60 Hz/59.94 Hz/50 Hz/30 Hz/29.97 Hz/25 Hz/<br>24 Hz/23.98 Hz<br>Data Rate: 3 Gbs<br>HD 1920 x 1080p60/59.94/50  |
| Video Test Patterns<br>37 each | SMPTE HD bars, 100% color bars, 100/75% color bars, 75% color bars, 100% color bars & red, SMPTE EG 1 bars, path equalizer PLL, 4:3 square, 16:9 square, 5 step staircase, 5 step UV staircase, Y sweep, UV sweep, Y multiburst, UV multiburst, Y ramp, UV ramp, Pluge, convergence, tartan bars, 1 field in 8 white, white, black, red, green, blue, magenta, cyan, static x frequency sweep lo zoneplate, static x frequency sweep hi zoneplate, static y frequency sweep zoneplate, moving x bars zoneplate, moving y bars zoneplate, moving xy bars zoneplate, static circular zoneplate, moving circular zoneplate. |
| Power Requirements:            | 3x AA-type batteries or included universal A.C. adapter (5 VDC)  |
| Power Consumption:             | Approximately 1.8 Watts maximum  |
| Battery Time:                  | Approximately 120-180 minutes with NiCd, 360-480 minutes with NiMH   |
| Power Auto Shut Off:           | 5 to 60 minutes adjusted in increments of 5 minutes, auto shut off may be disabled   |
| Screen Save:                   | 60 seconds (restore with button push)  |
| Dimensions (W x H x D):        | 2.58 x 4.86 x 0.94 (inch), 65.5 x 123.5 x 24 (mm)  |
| Supplied Accessory:            | Leather case with belt clip, universal AC power supply   |

# Features

General hardware features are indicated below. The setup functions, video test signals, and audio test tones are adjusted/selected using an on-screen menu system. See the OS Menu Operation section on the next page for details.

**Test Signal Outputs:** The selected Video test pattern (and any embedded audio test tones) are output from these two BNC connectors (same signal is output from each output).

**On/Off Switch:** This switch turns the unit power on and off. Note that the Auto Power Save function shuts off power after a selected interval when using batteries. Select from 5 and 60 minutes (increments of 5 minutes). See operation section for details.

**Color LCD Display:** The display shows the currently selected video test pattern as well as the OSD menus for setup and test selection. The screen saver feature will cause the display to turn off after 60 seconds of no input. Pressing any button will turn it back on. Note that while display is off, all other functions continue to operate normally



**External AC Adapter Jack:** For AC operation, attach the included universal power supply (5VDC) here.

**< Button:** This button is used to move left-ward through the menus and menu items. See the OS Menu Operation section for details.

**> Button:** This button is used to move right-ward through the menus and menu items. See the OS Menu Operation section for details.

**ENTER Button:** This button is used to accept selections. See the OS Menu Operation section for details.

**BACK Button:** This button is used to back out of sub-menus. See the OS Menu Operation section for details.

# On-Screen Menu Operation

Video and audio test selections and settings are made using the on-screen menu system. Two lines are available; the upper line displays the menu or option and the lower line displays the selection or parameter.

The currently selected video test pattern is displayed on the screen. The screen saver feature will cause the display to turn off after 60 seconds of no input. Pressing any button will turn it back on. Note that while display is off, all other functions continue to operate normally.



The active menu/option is displayed on the top line.

The parameter or setting associated with the above menu/option is displayed on the bottom line

| Steps<br>LEFT<br>through<br>selections | Steps<br>RIGHT<br>through<br>selections | Backs out<br>of current<br>menu/<br>selection | Enters<br>menu or<br>selection |
|--|---|---|--------------------------------|
|--|---|---|--------------------------------|

Press the < or > button to step through the five main menus/options as follows: **FORMAT > PATTERN > AUDIO > TEXT > SETUP**. Note that you make selections directly from the **FORMAT** and **PATTERN** menus while the **AUDIO**, **TEXT**, and **SETUP** menus contain submenus from which you make selections. Submenu structure is as follows:

| <b>AUDIO</b>    | <b>TEXT</b> | <b>SETUP</b>    |
|-----------------|-------------|-----------------|
| /Selected Pair  | /Enable     | /POWER OFF TIME |
| /Enable Select  | /Foreground | /LOAD DEFAULTS  |
| /Frequency      | /Background | /SAVE SETTINGS  |
| /Frequency Step | /Characters |                 |
| /Amplitude      |             |                 |
| /Type           |             |                 |

# FORMAT Select

Press the < or > button until FORMAT appears, then press ENTER to enter format select mode.

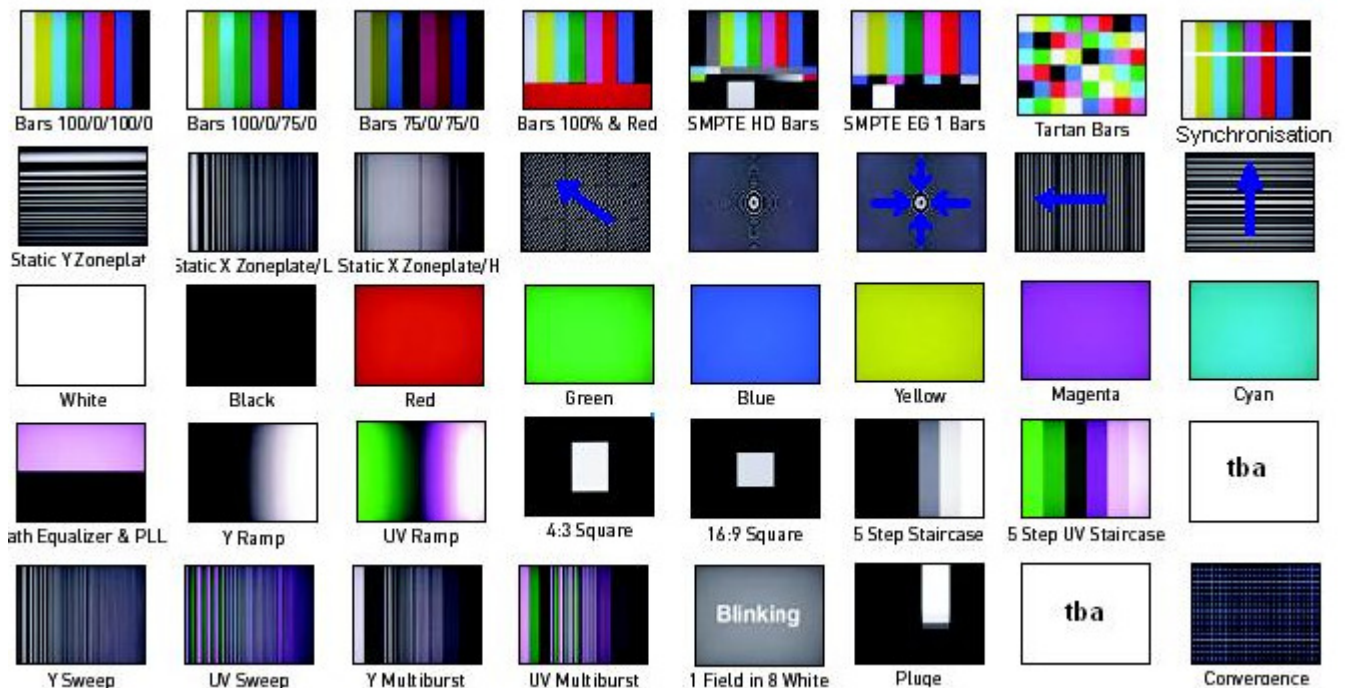
Use the < and > buttons to step through the format selections. Press the BACK or ENTER menus to accept the selection and back out from the format select mode. Format selections include:

- SD 720x480i59.94
- SD 720x576i50
- HD 1920x1000i60
- HD 1920x1000i59.5
- HD 1920x1000i50
- HD 1920x1080psf30
- HD 1920x1080psf29.97
- HD 1920x1080psf25
- HD 1920x1080psf24
- HD 1920x1080psf23.98
- HD 1920x1080p30
- HD 1920x1080p25
- HD 1920x1080p24
- HD 1920x1080p23.98
- HD 1280x720p60
- HD 1280x720p59.94
- HD 1280x720p50
- HD 1280x720p30
- HD 1280x720p29.97
- HD 1280x720p25
- HD 1280x720p24
- HD 1280x720p23.98
- 3G 1920x1080p60
- 3G 1920x1080p59.95
- 3G 1920x1080p50



# PATTERN Select

Press the < or > button until PATTERN appears. Press the ENTER button to enter pattern select mode. Use the < or > buttons to step through the video test pattern selections. When the desired pattern is displayed, press the ENTER or BACK button to accept the selection and back out from the pattern select mode.



## AUDIO Menu

Press the < or > button until AUDIO appears. Press the ENTER button to enter the AUDIO submenus.

Use the < or > buttons to step through the AUDIO sub-menus, which include:

- **AUDIO / Selected Pair**
- **AUDIO / Enable**
- **AUDIO / Frequency**
- **AUDIO / Frequency Step**
- **AUDIO / Amplitude**
- **AUDIO / Type**

Audio is output in stereo as digital AES. Use the AUDIO menu to set the parameters for the audio test tones embedded in the output signal.



### AUDIO / Selected Pair

After entering menu, press the ENTER button repeatedly to step through the eight audio pair selections as follows:

- **Group 1, Pair 1**
- **Group 1, Pair 2**
- **Group 2, Pair 1**
- **Group 2, Pair 2**
- **Group 3, Pair 1**
- **Group 3, Pair 2**
- **Group 4, Pair 1**
- **Group 4, Pair 2**

all sixteen audio channels are enabled by default with standard settings of 1000Hz tone, -20dBFS amplitude, and unbroken audio.

Each group/pair must be individually set. Select each group/pair and then apply the parameters (amplitude, tone etc) for that group/pair. To retain selected audio settings as the default, save using the SETUP/SAVE SETTINGS command as described on the next page.

### AUDIO / Enable Select

After entering menu, press the ENTER button to toggle the audio test tone output **On** and **Off**.

## AUDIO / Frequency

After entering menu, press the ENTER button to enter the audio frequency select mode, then use the < or > buttons to step through frequency selections up or down. A value from **10 Hz** to **20,000 Hz** may be selected in increments selected in the Frequency Step sub-menu (see below).

## AUDIO / Frequency Step

After entering menu, press the ENTER button to step through the increment values that will be used when selecting the audio frequency (see above). A value of **1, 10, 100, and 1000** may be selected.

## AUDIO / Amplitude

After entering menu, press the ENTER button to enter the audio amplitude select mode. Then use the < or > buttons to step through amplitude selections up or down. A value between **000 dBFS** and **-100 dBFS** may be selected in increments of **1 dBFS**.

## AUDIO / Type

After entering menu, press the ENTER button to step through the four audio test type selections, which include:

- **Both Unbroken**
- **Broken Left**
- **Broken Right**
- **Both Broken**

# SETUP Menu

Press the < or > button until SETUP appears. Press the ENTER button to enter the SETUP submenus. Use the < or > buttons to step through the sub-menus, which include:

- **SETUP / POWER OFF TIME**
- **SETUP / LOAD DEFAULTS**
- **SETUP / SAVE SETTINGS**

Set auto power-off timeout interval, load default settings, and save user settings as default

## SETUP / POWER OFF TIME

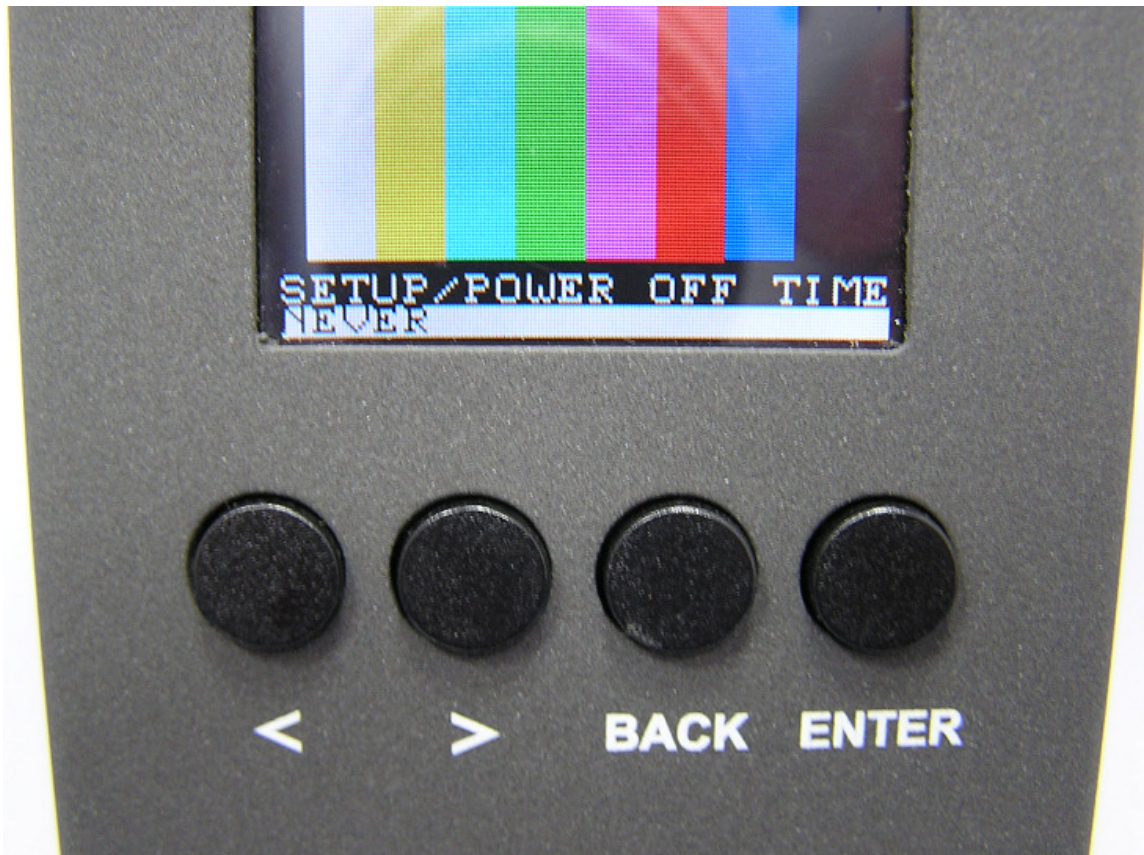
After entering menu, press the ENTER button to select the time interval for auto power off. Press the < or > button to step through the selections. Select between **5** and **60 minutes** (in **5 minute** increments) before the unit turns itself off. Select **Never** to disable the timeout feature. Note that when power saver function causes power to turn off, pressing any button (with the power switch turned On) will re-power the unit.

## SETUP / LOAD DEFAULTS

After entering menu, press the ENTER button to revert unit settings back to the **factory defaults**.

## SETUP / SAVE SETTINGS

After entering menu, press the ENTER button to **save** all unit settings as the default condition. At Power-up the unit will retain these settings.



## TEXT MENU

Press the < or > button until TEXT appears. Press the ENTER button to enter the TEXT submenus.

Use the < or > buttons to step through the sub-menus, which include:

- **TEXT / Enable**
- **TEXT / Foreground**
- **TEXT / Background**
- **TEXT / Characters**

Text messages may be output along with a video test pattern. Twenty characters on one line may be displayed in the lower third of the display output

### TEXT / Enable

After entering menu, press the ENTER button to toggle the text display feature **On** and **Off**.

### TEXT / Foreground

After entering menu, press the ENTER button to step through the eight **colours** (red/yellow/green/blue/magenta/cyan/white/black) for the **foreground** text. Press the BACK button when finished.

### TEXT / Background

After entering menu, press the ENTER button to step through the **colours** (red/yellow/green/blue/magenta/cyan/white/black) for the **background** field behind the text. Press the BACK button when finished.

### TEXT / Characters

After entering menu, press the ENTER button to enter the character entry mode. Use the < or > buttons to move between the character positions in the text line. Use the ENTER button to step up through characters and numbers alpha-numerically. Press the BACK button when finished.

In SETUP one may set the auto power-off timeout interval, load the factory default settings, and save user settings as the default at power-up.



## USEFUL WEBSITES

|                     |  |  |
|---------------------|--|--|
| <b>HAMLET</b>       | <a href="http://www.hamlet.co.uk">www.hamlet.co.uk</a>   |  |
| <b>HAMLET (USA)</b> | <a href="http://www.hamlet.us.com">www.hamlet.us.com</a> |  |
| <b>SMPTE</b>        | <a href="http://www.smpte.org">www.smpte.org</a>         | Society of Motion Picture Television Engineers |
| <b>DIN</b>          | <a href="http://www.din.de">www.din.de</a>               | German Standards Institute                     |
| <b>EBU</b>          | <a href="http://www.ebu.ch">www.ebu.ch</a>               | European Broadcasting Union                    |
| <b>AES</b>          | <a href="http://www.aes.org">www.aes.org</a>             | Audio Engineering Society                      |
| <b>ITU</b>          | <a href="http://www.itu.int">www.itu.int</a>             | International Telecommunication Union          |

## CONTACT DETAILS AND CUSTOMER SUPPORT

For any form of assistance in maintaining your Hamlet Axiom, please contact:

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### Hamlet USA

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Toll Free: 1-866-4-HAMLET (426-538)  
Email: [service@sencore.com](mailto:service@sencore.com) Web site: [www.hamlet.us.com](http://www.hamlet.us.com)

In correspondence concerning this instrument, please quote the serial number, which you will find printed on the label at the back of the unit.

## **INTERNAL BATTERIES FITTED**

The Batteries and Accumulators (Placing on the Market) Regulations 2008 implement in the UK the Internal Market provisions of the European Parliament and Council Directive on Batteries and Accumulators and Waste Batteries and Accumulators 2006/66/EC.

In accordance with Regulation 7 of these regulations, information is provided on the battery specifications and on their ready removal.

The internal batteries readily removable.

### **ACCESS**

To access the batteries, undo the single screw on the rear of the case and lift it off.

The battery type is 3No AA alkalines..