



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product’s enclosure that may present a risk of electric shock.

1 Caution

Read Instructions: read and understand all of the safety and operating instructions before using this equipment.

Retain Instructions: the safety instructions should be kept for future reference.

Follow Warnings: follow all warnings and instructions marked on the equipment or in the user manual.

Avoid Attachments: do not use tools or attachments that are not recommended by **Alyseum** as they may prove to be hazardous.



Installation:

- Choose the installation location of your unit carefully.
- Avoid placing it in direct sunlight or close to a source of heat.
- Additionally avoid locations subject to vibrations and excessive dust, heat, cold or moisture.



Servicing:

- Refer all servicing to qualified service personnel.
- There are no user-serviceable parts inside.
- To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.



WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



RECORD - User's manual

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3 What's the RECORD module?

The *Alyseum* RECORD Eurorack module offers a multitude of audio formats and high-quality audio streaming and recording with no fuss and in a small enough package to fit in every setup.

Having that audio playback inside your case and recording every patch you make has now become so easy!

The RECORD module can encode audio formats, from MP3, Ogg Vorbis, and WAV 16-bit PCM. The proprietary MP3 encoder and Ogg Vorbis encoder have been carefully tuned for highest possible audio fidelity for high-quality audio streaming or recording.

He also, can play back MP3, OGG and WAV PCM formats, making it very suitable for hi-fi audio playback.

NOTE: Never use directly the signal from your modular, always use an attenuator or mixer module to adapt the signal.

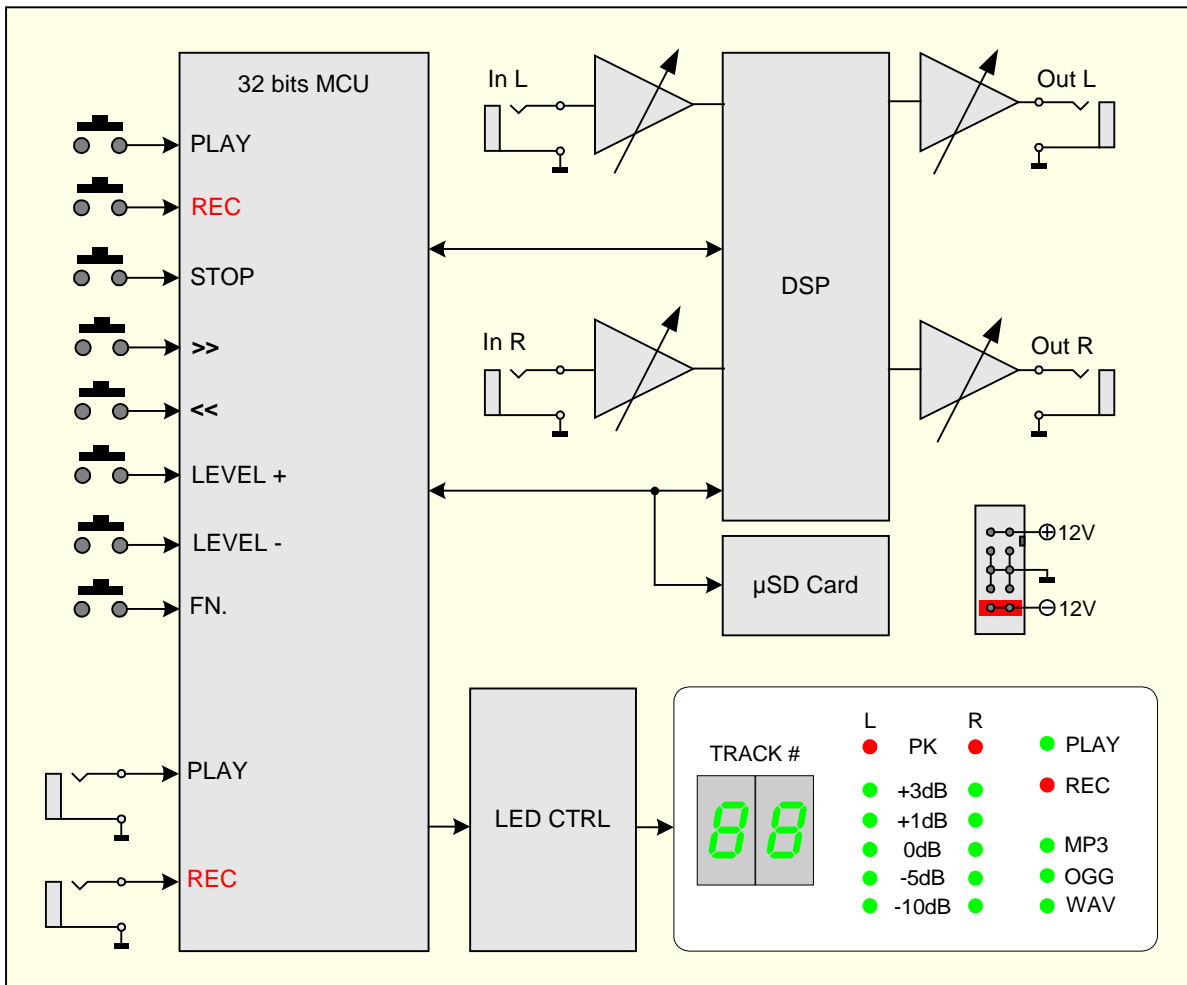
3.1 Features

- A Master 32 bits Processor with a μ SD card slot, support:
 - FAT12, FAT16 up to 2GB (SD Card standard)
 - FAT32 more than 2GB and up to 32GB (SDHC Card standard)
 - exFAT more than 32GB and up to 2 TB (SDXC Card standard)
- A slave specialized single Chip, contains a high-performance low-power DSP core, memories, as well as a high-quality stereo ADC and a variable sample-rate stereo DAC.
- File management: 99 Tracks for each format (MP3, OGG & WAV).
- File-based system configurations (auto generated with default properties into virgin memories)
- Upgradeable firmware by the user with a simple μ SD Card.

3.2 Specifications

- Front panel width: 30 mm (6HP)
- Module maximum depth: 26 mm
- Inputs jacks: 3.5 mm - ring/tip
 - **AUDIO LEVEL ONLY!** (NO compatible with CV or GATE or Analog signals)
 - Input Impedance : 80K Ω
 - Nominal input level: -10dBV
 - Maximum input level: +6dBV
 - Audio input maximum level: -1.4 to +1.4 Volts, protected until +/-12 Volts
- Outputs jacks: 3.5 mm - ring/tip
 - Nominal output level: -10dBV
 - Maximum output level: +6dBV, Protected until +/-12 Volts
- Power requirements:
 - +12 Volts regulated at 90 mA
 - -12 Volts regulated at 0 mA

3.3 Bloc diagram



3.4 Credits

Special thanks for comments, suggestions and/or ideas from Cyril (Modular Square), Philippe, Luca, Konstantine and Vangelis.

4 Hardware

4.1 Package Content

- One RECORD module with Eurorack compliant front panel
- One plastic bag containing:
 - Two M3 screws.
 - Two M3 nylon washers.
 - 10/16 pins Power ribbon cable.
- Warranty & user manual access card

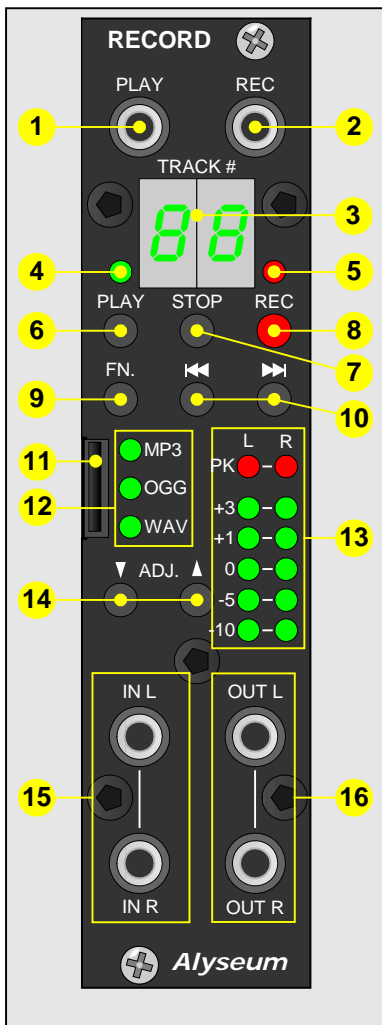
4.2 Installing the RECORD module



To install the RECORD module follow these instructions carefully:

1. Disconnect the Eurorack case from the main power supply by unplugging it from the wall socket!
2. Make sure that the power source of your Eurorack case is stable and noise-free.
3. Only connect the module to a Eurorack bus board powered by a specified A-100 power supply.
4. Make absolutely certain that the ribbon cable has the right orientation by connecting the indicated red stripe on the **negative 12 Volt** side of your Eurorack case bus board
5. Be advised that failure to properly plug in the power cable may result in the module malfunctioning or being destroyed as soon as the power is turned back on
6. Also be advised that for modules that have been damaged by being connected to the bus board in a wrong way the warranty is void!
7. Carefully place the module on an appropriately spaced spot on your Eurorack and fasten it firmly in place with the supplied screws and nylon washers. Replace any covers or blanking plates that you removed to install the module and screw them in firmly
8. Reconnect the Eurorack case power cable back into the main power supply and switch the case power on
9. Test out your newly installed RECORD module by following the instructions of **Chapter 5.1 Initialization Sequence**
10. If it doesn't seem to be working as expected, immediately disconnect the system from the mains power supply again. In this case, double-check the connections, making completely sure that the ribbon cable is the right way round where it connects to the module and the bus.

4.3 Front Panel



1. Input PLAY jack plug
2. Input REC jack plug
3. Dual Numeric LED Display (green)
4. PLAY LED (green)
5. REC LED (red)
6. Push Button PLAY
7. Push Button STOP
8. Push Button REC
9. Push Button FN.
10. Push Buttons << or >>
11. µSD Card slot
12. Format LED MP3 / OGG / WAV (green)
13. Stereo VU meter LED (Recording or Playing)
14. Push Buttons ↓ or ↑ to ADJ Recording or Playing level
15. Input Stereo line jack plug
16. Output Stereo line jack plug


4.4 About µSD Cards

µSD Cards are delicate media, In order to avoid damaging µSD cards, please take the following precautions when handling them.

- Do not leave µSD Cards in extremely hot or cold places.
- Do not leave µSD Cards in extremely humid places.
- Do not let µSD Cards get wet.
- Do not put things on tope of µSD Cards or twist them.
- Do not hit µSD Cards
- Do not remove or insert µSD Cards during recording, playback, data transmission or other access.
- When transporting µSD Cards, put them into cases, for example.
- During the transport of your case, remove and place your µSD card in a safe place.

5 Software (Revision 1.0)

5.1 Initialization Sequence

1. Turn the Eurorack case power On
2. RECORD module displays during 0,2 second the Revision of the firmware 
3. RECORD module turn On each individual and digit LED, one by one during 200mS.


5.2 μSD Card

You can use a μSD Card from 128MB up to 2TB (FAT12, FAT16, FAT32 and exFAT supported)

Use always μSD Card with a minimum Class 10 (10 MB/s Write)

File-based system configurations (auto generated with default properties into virgin memories)

5.2.1 How to insert the μSD Card ?

No present or not usable μSD Card is displayed .

At any time, you can insert a μSD Card and then press whatever push button to start.

Insert gently the μSD Card into the slot with the groove and the inscription on the left side.

5.2.2 How to remove the μSD Card ?

Hold press FN + STOP push buttons, display blinking  (Eject) during 2 seconds and then turn off.
Now remove the μSD Card device.

Catch the groove with your nail and then pull back gently the μSD Card.

NOTE: If your Eurorack case is power Off, you can remove the μSD Card at any time.



Never remove the μSD Card storage device during PLAY or REC mode.

5.2.3 Playing FORMAT selection

Currently 3 formats are available automatically:

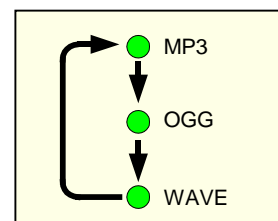
1. MP3 - 320 kbit/s - CBR or VBR @ 48 kHz stereo,
2. OGG (OggVorbis) - 300 kbit/s - VBR @ 48 kHz stereo
3. WAV - 1536 kbit/s @ 48 kHz - 16-bit PCM stereo

5.2.4 Recording FORMAT selection

RECORD module offer 3 different formats for Recording session.

1. MP3 in 320 kbit/s (VBR or CBR) is both hardware supported!
2. OGG max bitrate encoding capabilities is 333 kbit/s @ 48 kHz
3. WAV in 16 bits @ 48KHz sampling (no compression)

To select your choice, keep press gently the FN button and then press several times the REC button to change the format as follows:



5.3 Operations via the front panel

5.3.1 PLAYBACK operation

Press the PLAY button, playback starts from the track displayed.

To stop playback, press the STOP button.

To suspend playback temporarily (pause) press again the PLAY button and the green LED play blinking.

To resume playback, press again the PLAY button.

NOTE: The syntax of the FILE NAME is:

- MP3 file : Alyseum_ZZ.MP3
- OGG file : Alyseum_ZZ.OGG
- WAV file : Alyseum_ZZ.WAV

ZZ is the number of the track (from 01 until 99)



Never remove the μ SD Card storage device during Playback operation.

5.3.2 RECORDING operation

Press the REC button, LED REC turn On and recording starts.

Press the STOP button to stop recording.

To suspend REC temporarily (pause) press again the REC button and the red LED REC blinking. To resume recording, press again the REC button.

At each new recording, a new track is created automatically and displayed on the numeric display.

NOTE 1: If the 99 tracks or if the μ SD Card is full, the display blinks **FU** (Full), please:

- replace the μ SD Card by a new one
- or select an other format.

NOTE 2: The FILE NAME is fixed up automatically in regular sequence like:

- MP3 file : Alyseum_ZZ.MP3
- OGG file : Alyseum_ZZ.OGG
- WAV file : Alyseum_ZZ.WAV

ZZ is the number of the track (from 01 until 99)

NOTE 3: Adjust the Gain of the external audio source to suitable level before recording. If not, the recording quality becomes poor.



Never remove the μ SD Card storage device during recording operation.

5.3.3 Fast Forward & Fast Backward (Search for a part of a track)

During playback, keep pressed the << or >> button more than 1 second and release it when the part you want to listen to is found.

NOTE: Keep pressed more than 10 seconds the << or >> button, FF or FB accelerate automatically.

5.3.4 Selecting previous or next track

Only in STOP Mode, press << or >> button several times until the desired track is found.

In PLAY mode, press << or >> button several times until the desired track is found. The selected track will be played from the beginning.

When the << button is pressed once during the playback, the track being played will be played from the beginning.

5.3.5 Erase a track

Only in STOP mode, press << or >> button several times until the desired track to erase is selected.

Keep press gently FN + PLAY buttons during more than 2 seconds, number of the selected track blinks and finally the track is erased.

The next track # is selected automatically.

5.4 Level adjustment

5.4.1 Playing - level adjustment

You can adjust the output level step by step, each step represents a value of 0,5dB.

No attenuation (Gain 1) , displays 50, the maximum attenuation is -24,5dB, displays 01, and mute, displays 00.

The last playing level adjustment is automatically saved in Flash.

5.4.2 Before recording - level adjustment

Before starting recording, input levels should be adjusted to prevent recorded sounds or signals from being distorted due to excessive input levels and to prevent them from being so low that they are below the noise floor.

Push more than 1 second the REC button and the LED REC flashing quickly, display indicates SE (Setting) and the VU meters are connected to the input.

Press ↑ or ↓ buttons and adjust the recording level according to the feedback of the VU.

The recording level is adjustable between 01 and 40.

The last recording level adjustment is automatically saved in Flash.

NOTE 1: At any time, you can start the recording promptly if you shortly push the REC button again.

NOTE 2: Never use directly the signal from your modular, always use an attenuator or mixer module to adapt the signal.

5.4.3 During Recording - level adjustment

Press REC button, recording starting and the VU meters are connected to the input.

Press ↑ or ↓ buttons and adjust the recording level according to the feedback of the VU.

The recording level is adjustable between 01 and 40.

The last recording level adjustment is automatically saved in Flash.

NOTE: Never use directly the signal from your modular, always use an attenuator or mixer module to adapt the signal.

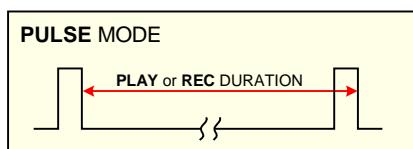
5.4.4 Resume operations

Buttons Combinations	Release	Action
PLAY	STOP	Playback track # displayed
Hold + 1 sec. PLAY		Playback all successive tracks in the current format
PLAY (pause)	PLAY	PLAY suspended (pause), LED PLAY blinking. To restart playing push PLAY button again
Hold + 1 sec. REC	STOP	Before recording - Connect only the VU meter to the inputs. To start recording push again REC Recording level (step by step 01 until 40)
REC	STOP	Recording a new track and connect the VU meter to the inputs Recording level (step by step 01 until 40)
REC (pause)	REC	Recording suspended (pause), LED REC blinking and connect the VU meter to the inputs. To restart REC push again REC button or push STOP button to STOP. Recording level (step by step 01 until 40)
REC	PLAY	Not available
STOP	--	Return in STOP mode and connect VU meter to the input
FN + RECORD	STOP	Format selection, MP3 or OGG or WAV
<< or >>		Track number selection (01 until 99)
	REC	Not available
	PLAY	Start the execution of the previous or next track
Hold + 1 sec. << or >>		2X Forward or backward (no effect during recording)
Hold + 10 sec. << or >>		8X Forward or backward (no effect during recording)
Hold + 2 sec. FN + PLAY	STOP	Delete Track - # TRACK to delete blinking
↑ or ↓	PLAY	Playing level (step by step 00 until 50)
Hold + 0,7 sec. ↑ or ↓		Fast Playing or Recording level (00 until 50)
Hold + 2 sec. FN + STOP	STOP	Un-mounts the file system and μSD card is free to remove. To restart the module, insert a μSD and press whatever button
FN + << or >>		decrease or increase the LED luminosity (L0 until L9)
STOP + >>		Toggle PULSE or LOGIC mode – Displayed PU or Lo during 1Sec

5.5 Operation via the external inputs PLAY & REC

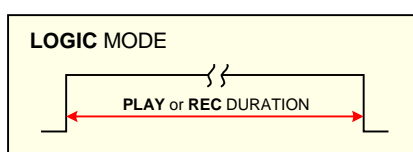
5.5.1 PULSE Mode

Width of the pulse signal must have a duration greater than 5 mS, amplitude greater than 4V and duration between two pulses must be great as 1 second.



5.5.2 LOGIC Mode

Duration between two logic signal must be great as 0.5 second and amplitude greater than 4V.



NOTE 1: Anyway, it is possible to stop Playback or Recording by a simple press of the STOP button.

NOTE 2: If PLAY is active, the REC function is disable and vice versa (XOR).

5.5.3 Select LOGIC or PULSE Mode

Only in STOP mode, press STOP + >> buttons to switch in LOGIC mode, displayed during 1 Second **Lo**. Press again STOP + >> buttons to switch in PULSE mode and displayed during 1 second **Pu**.

5.5.4 Resume operation via the external inputs PLAY & REC

Pulse mode (via Jack)	Release	Action
PLAY	STOP	Playback track # displayed
PLAY (pause)	PLAY	PAUSE, LED PLAY blinking. To restart PLAY pulse again the input gate PLAY or push STOP button to STOP
REC	STOP	Recording a new track
REC (pause)	REC	Recording suspended (pause), LED REC blinking. To restart REC pulse again the input gate REC or push STOP button to STOP

Logic mode (via Jack)	Release	Action
PLAY	STOP	Start playing # track displayed at the rising edge and stop at the falling edge or push STOP button to STOP.
REC		Start recording at rising edge and stop at the falling edge or push STOP button to STOP

5.6 Firmware Bootloader

The RECORD module is pre-programmed with the ability to receive firmware upgrades (for bug fixes, extra features, customizations etc...) via the µSD card.



It's important that you fill in the contact form on our website www.alyseum.com by mentioning that you have got a RECORD module in order to receive the updated firmware by Email.

5.6.1 Download the new firmware

First, turn Off your Eurorack case.

Second, with your computer, download and UNZIP the new file "image.hex". Copy the file on a empty µSD card (maximum size of 32GB and of course formatted – no exFAT supported) and insert it on the slot of the RECORD module.

5.6.2 Activate the bootloader of the RECORD

Keep pressing PLAY + REC buttons, then turn On your Eurorack case, the Red LED REC blinks during 2 seconds, then the display show **UP** (UPLoad), now you can releasing the PLAY & REC buttons.

At this point, if the "image.hex" is found in the µSD Card, the bootloader will load the content in the flash of the Microprocessor. During this phase the Red LED REC blinks fast during erasing process and then the Green LED PLAY blinks fast during writing process.

The initialization sequence start and the RECORD module is updated!

5.6.3 Points of failure:

If the bootloader does not find the µSD the Green LED PLAY blinks slow forever until the µSD card is inserted.

If the µSD Card is detected and the file "image.hex" has some problems, 4 kinds of errors are detected. The display shows the codes: **Sd**, **E1**, **E2**, **E3** or **E4** and the software loop forever until the power is restarted.

- **Sd** for µSD card no present.
- **E1** for Error 1. File "image.hex" non valid or not present in the µSD card
- **E2** for Error 2. Some read error with file "image.hex" (the file could be empty). Format the µSD card with FAT16 or FAT32 and try again (exFAT is not supported during the update firmware).
- **E3** for Error 3. File "image.hex" terminated incorrectly or corrupted (the file could be truncated during the copy). Ensure to remove the µSD card properly when written with PC.
- **E4** for Error 4. File "image.hex" Hex record Checksum mismatch. There are a corruption in the file. Generate a new one from sources.

5.6.4 Firmware revision history

- Rev. 1.0 – Logic bug fixed.
- Rev. 0.9 - Firmware revision is displayed shortly after module startup.
- Rev. 0.9 - Possibility to adjust the recording level without launching the recording.
- Rev. 0.9 - Improved multiplexing of the display for less noise
- Rev. 0.9 - Bug inside DSP chip has been fixed (sometimes the chip swapped L & R outputs).
- Rev. 0.8 - ExtFAT is supported with latest FatFS library version.
- Rev. 0.8 - Some fixed minor bugs.
- Rev. 0.7 – First commercial release.

6 Miscellaneous

6.1 Disclaimer

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The information and specifications described in this manual are subject to change without prior notice

Throughout this manual, trademarked names might be used. We state herein that we are using the name to the benefit of the trademark owner, with no intention of infringement.

6.2 Maintenance



Switch Off the power before maintenance.

Do not attempt to clean the module with chemical solvents (thinner, benzene or alcohol) as this might damage the finish. Use only a clean, dry cloth.

6.3 Static Electricity, ESD



Electrostatic discharge (ESD) can cause malfunction and/or damage to electronic devices if discharged into the module.

Despite *Alyseum* products having built-in protections against ESD, voltages might build up at levels that could harm your equipment.

6.3.1 Some tips and precautions for ESD sensitive environment

- Make sure to discharge any built-up static electricity from yourself and your devices before touching or connecting one device to another
- Ground yourself by touching an earth grounded metal surface before handling your module and other equipments.
- For fixed installations, place the module in a grounded metallic rack.
- Ensure air relative humidity is minimum 60%.
- Install ESD specific prevention items, such as grounding mats.
- Reduce movement speed when handling or (dis)connecting devices
- Avoid carpet or other synthetic flooring.

6.3.2 Standard symbols for ESD advertising



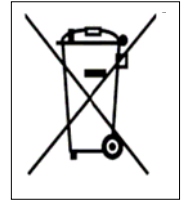
6.4 Statement and Agency Compliance

6.4.1 WEEE (for EU countries)

Waste Electrical and Electronic Equipment (Directive 2002/96/EC)

(Applicable for E.U. Customers or others countries with separate collection systems)

1. This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life.
2. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.
3. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.



6.4.2 RoHS Compliance (for EU countries)

Alyseum products comply with the European Union restriction of the use of certain hazardous substances in electronics equipment, (RoHS directive 2002/95/EC)

The RoHS directive prohibits the sale of certain electronic equipment containing some hazardous substances such as Mercury, Lead, Cadmium, Hexavalent chromium and certain Flame-retardants (PBB & PBDE) in the European Union.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0095:EN:HTML>



6.4.3 CE (for EU countries)

Alyseum products comply with the requirements of European Directive 89/336/EC.



6.5 Warranty and repair

Alyseum warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for a period of **TWO YEARS** from the date of purchase.

You need to delivery :

- A copy of the invoice
- The serial number of the module (sticker on the back)

This warranty does not apply to any products which have been repaired or altered by other than repair personnel authorized by **Alyseum**, or which have been subject to ESD, moisture, abuse, accident or improper installation and use.

Alyseum assumes no liability as a consequence of such events under the terms of this Warranty.

Please consult your dealer for more details.