

AL-22c - User's manual



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 Instruction: 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** Company because they may be hazardous.



Installation:

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



Power Source:

- This equipment should only be operated from the power source indicated on the product.
- When removing the wall-plug power from the wall outlet, never yank the cord.



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.

2 Contents

1	Caution	1
2	Contents	2
3	What’s the AL-22c	3
3.1	Features	3
3.2	Applications	3
3.3	Specifications	3
4	Hardware AL-22C	4
4.1	Package content	4
4.2	Accessories	4
4.3	Panel description	4
5	What’s the Global MIDI Network	5
5.1	Wired and wireless connections	5
5.2	Virtual connections	5
6	Software AL-22c	6
6.1	CopperLan Manager	6
6.1.1	Merging MIDI function	6
6.1.2	Establish MIDI connections	6
6.2	Settings (Edit tab)	7
6.3	Firmware Upgrade software	7
7	About	8
7.1	Ethernet	8
7.1.1	Note about Wi-Fi use	8
7.1.2	Tips for a efficient Ethernet Network	8
7.2	CopperLan	8
8	Miscellaneous	9
8.1	Disclaimer	9
8.2	Maintenance	9
8.3	Static Electricity, ESD	9
8.3.1	Standard symbols for ESD advertising	9
8.3.2	Some tips and precautions for ESD sensitive environment	9
8.4	How to wire the Ethernet cable ?	10
8.5	How to wire a MIDI cable ?	10
8.6	Statement and Agency Compliance	11
8.6.1	WEEE (for EU countries)	11
8.6.2	RoHS Compliance (for EU countries)	11
8.6.3	CE (for EU countries)	11
8.7	Warranty and repair	11
8.8	MIDI Chart	12

3 What's the AL-22c

The **Alyseum** AL-22c offering an very attractive price with the same performances of our old products: The AL-22 and AL-22PoE.

The **Alyseum** AL-22c is an embedded networked computer Box.

It uses the Ethernet network to transport MIDI flows between any CopperLan compliant hardware or software applications in computers.

The AL-22c provides the Top and the Unique alternative compared to a classical USB MIDI patch-bay including 2 bi-directional MIDI ports.

A AL-22c allows you to connect 2 MIDI In and 2 MIDI Out ports (up to 4 MIDI cables), simply and in a flexible way.

Of course, the AL-22c can exchange MIDI flows with any other AL products (Peer to peer functionality) or any other product supporting CopperLan.

AL-22C are supplied ready to use, the actual linking is managed via the CopperLan Manager software. This freeware tool is also used to monitor the status of all CopperLan computers and equipment. The box can be controlled from any computer anywhere in the network.

3.1 Features

- Self-contained interface, 2 MIDI In/Out pairs to CopperLan interface.
- 100 Base-T Ethernet interface.
- Auto-MDIX allows the use of straight-through or cross-over UTP cable.
- peer to peer MIDI transport, on a channel basis, remapping and merging.
- peer to peer MIDI transport without computer.

3.2 Applications

- Home Studio
- Backstage
- Synthesizer Collector

3.3 Specifications

- Dimensions (W x H x D): 90 x 68 x 28 mm
- Weight: 0,18 Kg
- Power requirements: DC plug 2.1mm – 5 VDC - positive in center.
- Power Consumption: 0,8 Watts

4 Hardware AL-22C

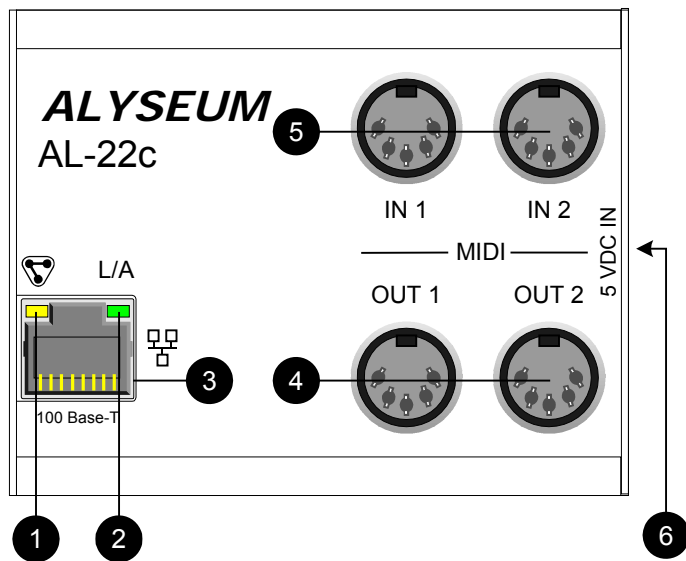
4.1 Package content

- 1 AL-22c device
- 1 Wall-plug power with 90-250VAC auto sensing inlet
- User’s manual access card

4.2 Accessories

<http://www.alyseum.com/accessories>

4.3 Panel description



1. Green LED – CP activity

CP activity Mode	LED Pattern
Firmware Upgrade ready	Slow blinking
Firmware Upgrade activity	Fast blinking
CP establishing connection	OFF with ON pulses
CP Activity	ON with OFF pulses

2. Yellow LED – Network Link/Activity

LK/ACT Mode	LED Pattern
No connection	OFF
LINK established	ON
Network activity	ON with OFF pulses

3. RJ45 – Ethernet connector – 100 Base-T
4. DIN41524 (5 pin) – Dual MIDI Outputs
5. DIN41524 (5 pin) – Dual MIDI Inputs
6. DC plug 2.1mm – 5 VDC - positive in center

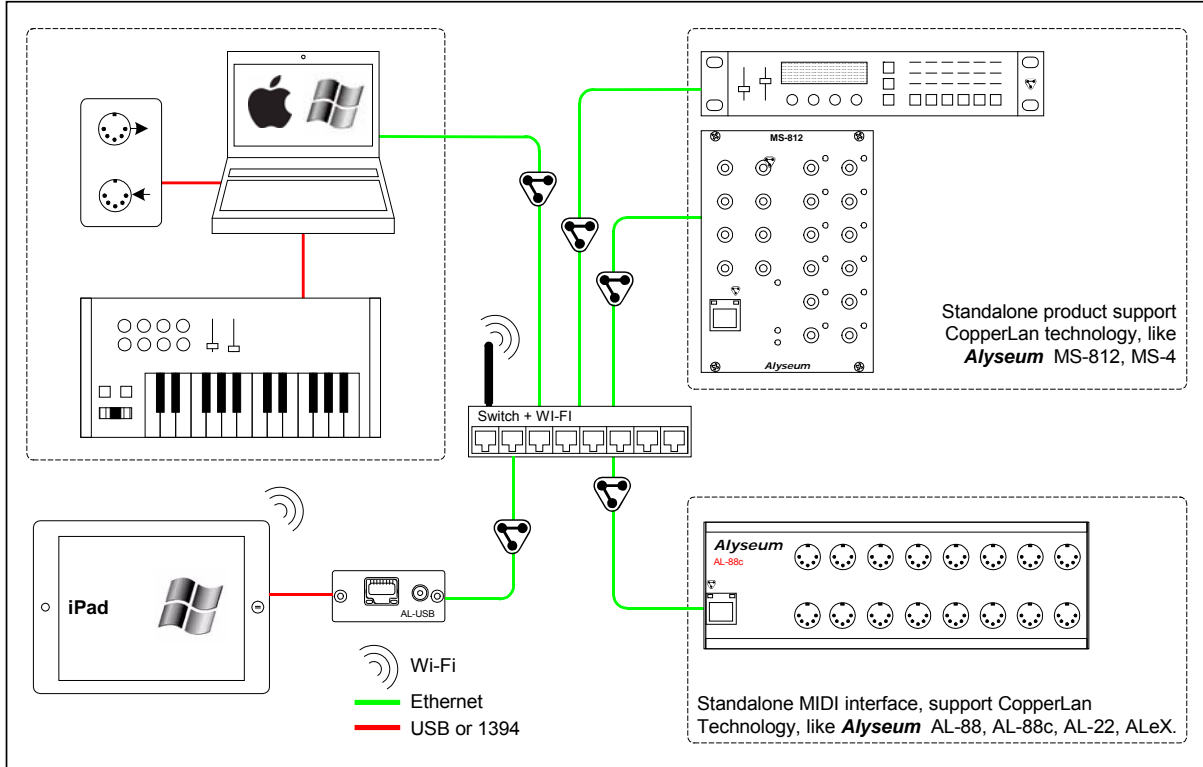


Use only the wall-plug power module supplied with AL-22c.

5 What's the Global MIDI Network

5.1 Wired and wireless connections

This drawing depicts the Global connectivity between various MIDI equipment and applications that freely exchange data in the Global MIDI Network environment.

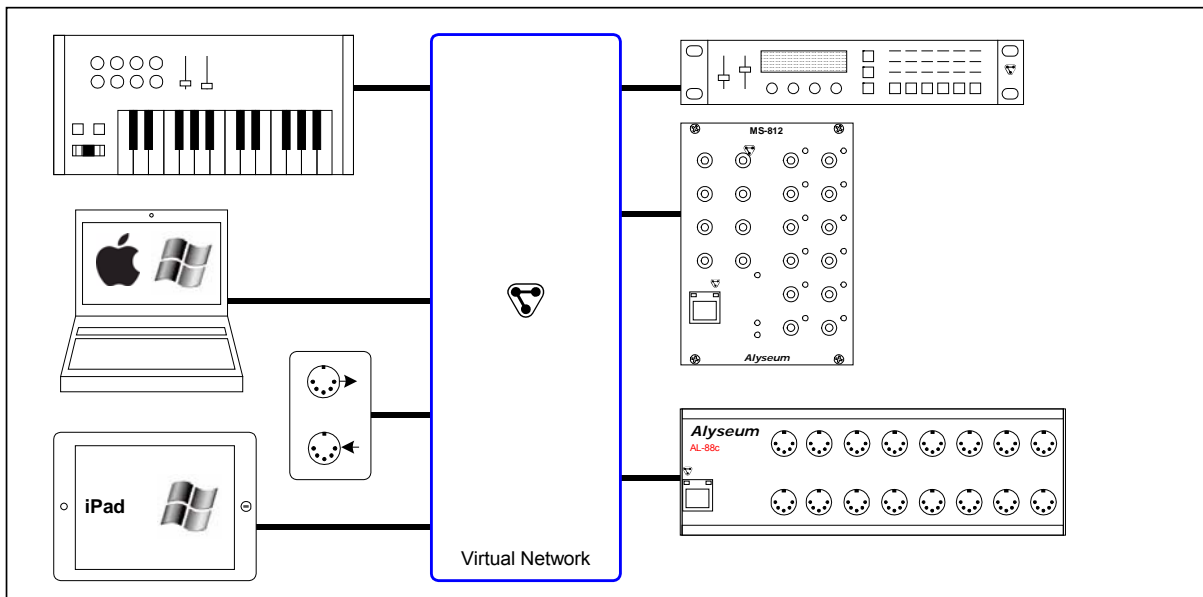


5.2 Virtual connections

The following drawing gives a virtual perception of the connected equipment.

Two key aspects are standing out:

1. Everything can talk to anything
2. The physical connection type is irrelevant and is totally hidden to the user



6 Software AL-22c

6.1 CopperLan Manager

Editing and establishing virtual connections from/to the AL-22c is done via the **CopperLan Manager** application software.

The **CopperLan Manager** is part of the **CopperLan Package** available cost free from the CopperLan website <http://www.copperlan.org>

This application software provides 4 different tabs for the management of a CopperLan network:

1. An **Overview** tab, displaying all machines & computers and their current connections.
2. A **Connect** tab, to add/remove connections between device's outputs and inputs.
3. An **Edit** tab, providing a universal way to edit parameters.
4. A **Snapshot** tab, to store network configuration and settings.



Remember to save your settings after being done with editing.

6.1.1 Merging MIDI function

Connecting two or more sources to the same destination, realizes a merging functions.

Beware that MIDI does not allow merging every type of message at any time. Merging two sysex messages may lead to unpredictable results.

More information on our application note: <http://www.alyseum.com/download>.

6.1.2 Establish MIDI connections

It is possible to connect any source to any destination, as a whole virtual cable or according to message type.

To connect a whole virtual cable, select the appropriate source device and click on the MIDI connector icon. You complete the operation by selecting a destination. All messages appearing at the source will be transferred to the destination without any filtering or remapping.

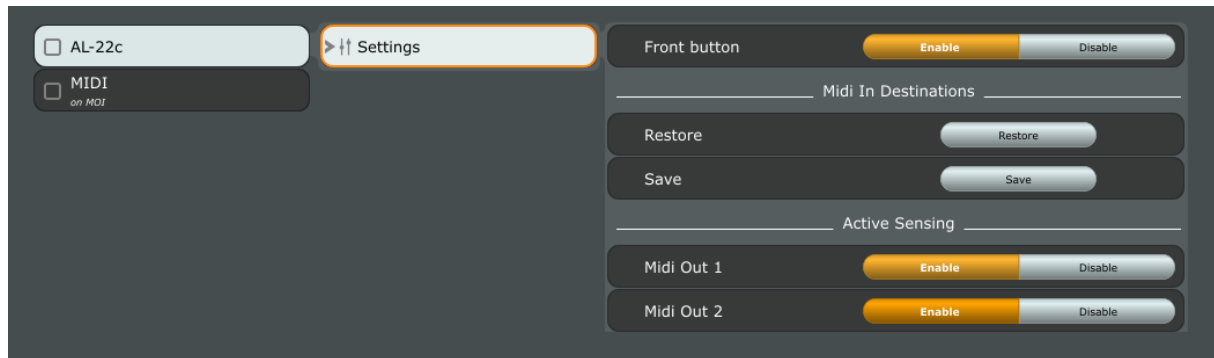
Instead of connecting a whole cable content, it is allowed to connect individually one or more message types according to the following split:

1. Note and Controller messages on a channel basis – these are channel messages
Any of the 16 MIDI channels content can be linked separately
2. Clock messages (incl. clock control and song position messages)
Any clock from any source can be connected to any destination. Note that MIDI destinations can only accept a single clock whereas CopperLan destinations can accept many.
3. Other messages (Sys)
This selection covers all messages to the exception of messages in categories 1 and 2 here above. This linking is essentially used for SYS EX and MTC messages.

It is meaningful to only connect sources and destinations of adequate messages type (e.g. Sys to Sys). However, it is allowed to connect any source channel to any destination channel, effectively realizing a channel remapping.

More information on our application note: <http://www.alyseum.com/downloads>

6.2 Settings (Edit tab)



AL-22c settings are done via the CopperLan Manager (**Editor** tab)

1. **Front Button** - not available for this product.
2. **Restore** originals MIDI In connections – for standalone application.
3. **Save** MIDI In destinations – for standalone application.
4. Enable or disable the active sensing on **MIDI Out 1**.
5. Enable or disable the active sensing on **MIDI Out 2**.

The save is done automatically.

6.3 Firmware Upgrade software

Upgrading the firmware is done via the network.

This is done automatically through the CopperLan Manager via an internet connection.

7 About

7.1 Ethernet

Alyseum products rely on Ethernet to transport data; compared to other solutions (USB, IEEE1394, ...) Ethernet offers many advantages:

- Available on all computer platforms
- No real limit in cable length and node connections.
- Full Duplex.
- Very high bandwidth.
- Very low Latency.
- Frees the computer of the MIDI flow handling of USB/Firewire interfaces
- Embedded devices can work without any computer in the network
- Peer to peer capability.
- Full electrical isolation between machines, preventing audio hum due to ground loops.
- Low cost, ubiquitous and reliable infrastructure.

7.1.1 Note about Wi-Fi use

Using these products via Wi-Fi is possible but not guaranteed. Wireless transmissions are subject to perturbations that require data resending which implies unavoidable delays which are inconvenient for real-time musical purposes.

This is why **Alyseum** only guarantees good performance when using wired network.

7.1.2 Tips for a efficient Ethernet Network

The performance of an Ethernet network is always related to the weakest link.

- Use the WI-FI only for the web, Email, ... and the wired network of your computer for the CopperLan and audio streaming
- For large installations, use an additional network card in your computer to create a network dedicated only for CopperLan and audio streaming
- For large installations , preferably use Gbit Ethernet switches to guarantee a better data exchange
- Avoid Ethernet HUB as these create collisions in messages that could hamper the overall network performance

7.2 CopperLan

CopperLan offers many advantages:

- Connectivity guaranteed with any hardware/Software supporting CopperLan.
- No IP addresses, thanks to an address abstraction layer.
- Protocol and networking system for command & control + streaming management.
- Self configuring & Plug and Play.
- Decentralized work distribution and storage – every CopperLan equipment incorporates its own server.

CopperLan manages MIDI in a more powerful and flexible than any other technology available. The benefit of having its own dedicated protocol surpasses the afterthought solutions relying on TCP/UDP-IP in terms of speed and user-friendliness.

8 Miscellaneous

8.1 Disclaimer

All rights reserved. Reproduction in whole or part of this document is prohibited without the express permission of **Alyseum**.

© 2011-2015 **Alyseum**.

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

Other products or brand names mentioned herein are trademarks or registered trademarks of their respective holders.

8.2 Maintenance



Switch Off the power before maintenance.

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

8.3 Static Electricity, ESD



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

Even **Alyseum** products have built-in protections; ESD exists and might build up at levels that could harm your equipment.

8.3.1 Standard symbols for ESD advertising



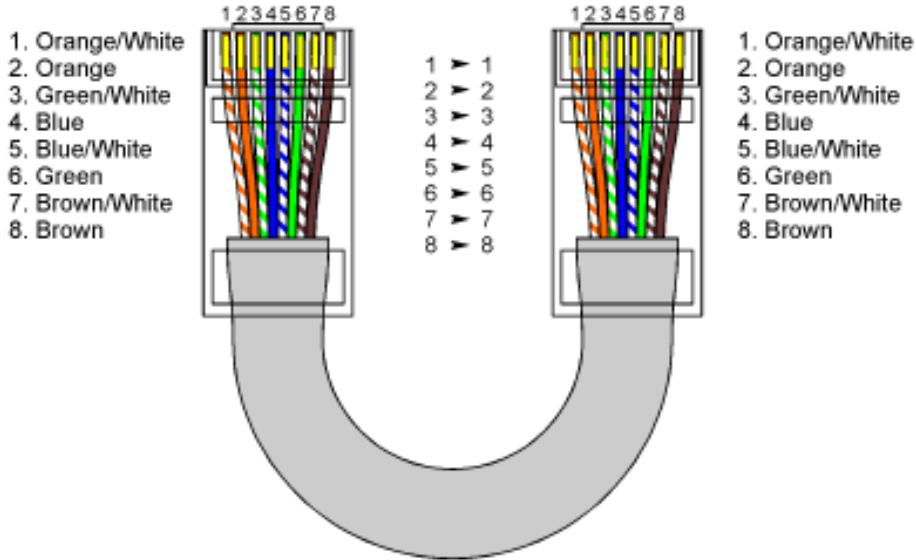
8.3.2 Some tips and precautions for ESD sensitive environment

- Make sure to discharge any built-up static electricity from yourself and your device before touching or connecting one device to another
- Ground yourself by touching a earth grounded metal surface before handling your device and other equipments.
- For fixed installations, place the device in a grounded metallic rack.
- Ensure air relative humidity at 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.

8.4 How to wire the Ethernet cable ?

If you want to build your own Ethernet cable, dont worry, use CAT5 cable, RJ45 connectors and a crimping clamp.

The maximum lenght for a single cables are 100 meters



Pin	Function
1	TX+
2	TX-
3	RX-
6	RX+

8.5 How to wire a MIDI cable ?

Pin	Function
2	Ground
4	Data +
5	Data -

8.6 Statement and Agency Compliance

8.6.1 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.

8.6.2 RoHS Compliance (for EU countries)

Alyseum products complies 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>

8.6.3 CE (for EU countries)

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



8.7 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.

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 using.

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

Please consult your shop for more details.

8.8 MIDI Chart

AL-22c **MIDI IMPLEMENTATION CHART ver.1.0.** **2014-12-08**

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1-16	1-16	pass-through
	Changed	--	--	via network mapping
Mode	Default	--	--	not applicable
	Messages	X	X	pass-through
	Altered	--	--	not applicable
Note Number		0-127	0-127	pass-through
Velocity		X	X	pass-through
After Touch	Keys	X	X	pass-through
	Channels	X	X	pass-through
Ptch Bend		X	X	pass-through
Control Change		X	X	pass-through
Prog. Change True#		X	X	pass-through
System exclusive		X	X	pass-through
System Common	Song Position	X	X	pass-through
	Song Select	X	X	pass-through
	Tune Request	X	X	pass-through
System Realtime	Clock	X	X	pass-through
	Commands	X	X	pass-through
Aux Messages	Local On/Off	X	X	pass-through
	All Notes Off	X	X	pass-through
	Active Sensing	O	X	Via CopperLan
	System Reset	O	O	
Notes				