MAX-08

User Manual
Version 01.03



MULTI CONTROLLER RECORDER DMX / ARTNET / UDP / AUDIO / LAN / SD

Code: 0431 / FW.1.1

Thank you for purchasing our device.

We have made every effort to ensure that our products are of the highest quality and meet your expectations. If you have any comments or observations, please send them to us.

We will be grateful for any suggestions that will help us produce even better devices that meet your needs.



"Art-Net™ Designed by and Copyright Artistic Licence Holdings Ltd."

Table of Contents

1. General Description 4
2. Basic Safety Conditions 6
3. Description of Outputs and Indicators 7
4. Description of Indicator Operation 8
5. Connection Diagram for PWM LED Control 9
6. Connection Diagram for OC Motor Control 10
7. Connection Diagram for OC Relay Control 11
8. Triggering Scenarios 12
9. Additional TRIGGERS Function 14
10. Configuration 15
11. Recording a Show 22
12. Uploading Audio Files 22
13. Power Supply 23
14. Factory Reset 24
15. IP Address 25
16. Maintenance and Repairs 25
17. Enclosures and Dimensions 26
18. Technical Specifications 27
19. Contact Information 27

1. General Description

The MAX-08 MODUS is a multifunctional controller featuring 8 outputs, a 2x50W audio player, a DMX output, 8 trigger inputs, an Ethernet port, and an internal Artnet signal recorder.

The main function of the controller is to program work scenarios so that all its outputs and audio files from the SD card are activated and played synchronously in time.

Thus, launching a recorded scenario triggers the playback of various audio files synchronously with DMX signals and OC/PWM outputs (Open Collector / Pulse Width Modulation).

The controller can operate in several modes: "STAND ALONE," "TRIGGERS," or "LAN."

- **"Stand Alone" mode**: The controller executes programmed sequences upon powering on.
- **"TRIGGERS" mode**: Programmed scenarios are triggered using one of the 8 "Triggers" or via the Artnet protocol.
- **"LAN" mode**: All device functions are controlled/triggered via the LAN network in real-time.

The controller can be powered with a voltage range of 12-24V DC from a dedicated power supply.

Each of the 8 outputs can be configured as OC or PWM and assigned to selected DMX/Artnet channels for flexible configuration.

Device configuration is done via the LAN network using the MAX8 DevManager program, making parameter settings quick and useful, especially when the device is installed in hard-to-reach places.

The MAX-08 is compatible with other Art Control System MODUS devices, allowing the creation of control systems for most interactive lighting, AV control, and game triggering projects.

The low-profile flat enclosure in DIN 35mm standard allows installation in a standard distribution cabinet. Optionally, the device can be supplied in a housing designed for harsh outdoor conditions.

The MAX-08 finds wide application as an autonomous controller for interactive exhibitions, multimedia fountains, animatronics, multimedia shows, alarm message players, DMX/Artnet recorder/players, Artnet-DMX512 converters, etc. The large number of functions and configurations, hardware triggers, LAN triggering, programming of show response parameters with audio, and built-in stereo power amplifier allow the controller to be used in many other challenging and unique projects.

The controller is sold in three functional versions:

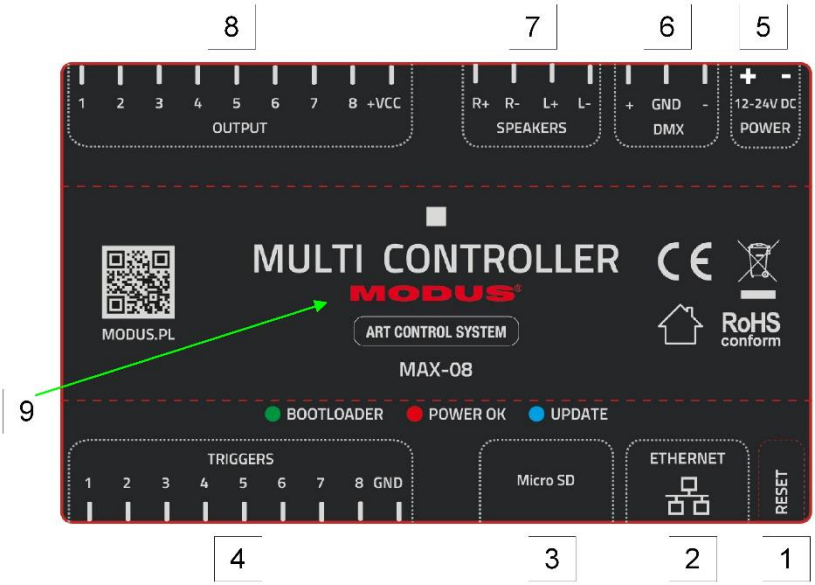
- **Version A - Standard**: Inactive DMX output, up to 4 scenarios
- **Version B - Pro**: Inactive DMX output, up to 8 scenarios
- **Version C - Ultra**: All device functions active

2. Basic Safety Conditions

The MODUS MAX-08 is a device powered by a safe voltage range of 12-24V DC, but the following rules must be strictly followed during its installation and use:

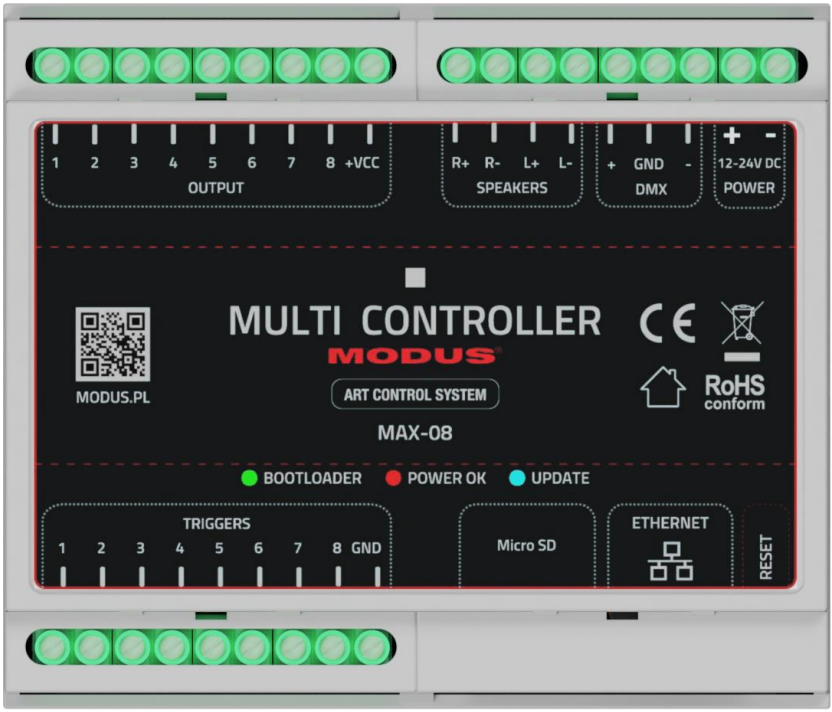
1. Installation should be carried out by a person with appropriate qualifications according to the description in the manual.
2. The device may only be connected to stabilized voltage with a load capacity compliant with the technical data.
3. The maximum current and voltage values of the connected device must be strictly observed and not exceeded.
4. The module is intended for indoor use. Additional housing options are described on page 28, point 11.
5. All cables must be protected against mechanical and thermal damage.
6. Any repairs should only be carried out with the power off.
7. Do not connect a device with visible damage to the power supply.
8. The device must be protected from contact with water and other liquids.
9. Avoid severe shocks and especially drops.
10. Do not operate the device in rooms with humidity above 90%.
11. The device should not be used in places with temperatures below +2°C or above +40°C without additional casing ensuring appropriate ambient temperature.

3. Description of Outputs and Indicators



1. **Reset Button**: Restores default device settings, system restart
2. **RJ45 Ethernet Connector**: LAN network
3. **Micro SD Card Slot**
4. **Control Inputs**: Trigger
5. **Power Connector (GND +12...24V DC)**
6. **DMX Output/Input**
7. **Power Amplifier Output Channels R L**
8. **OC or PWM Outputs**
9. **Status Indicator**

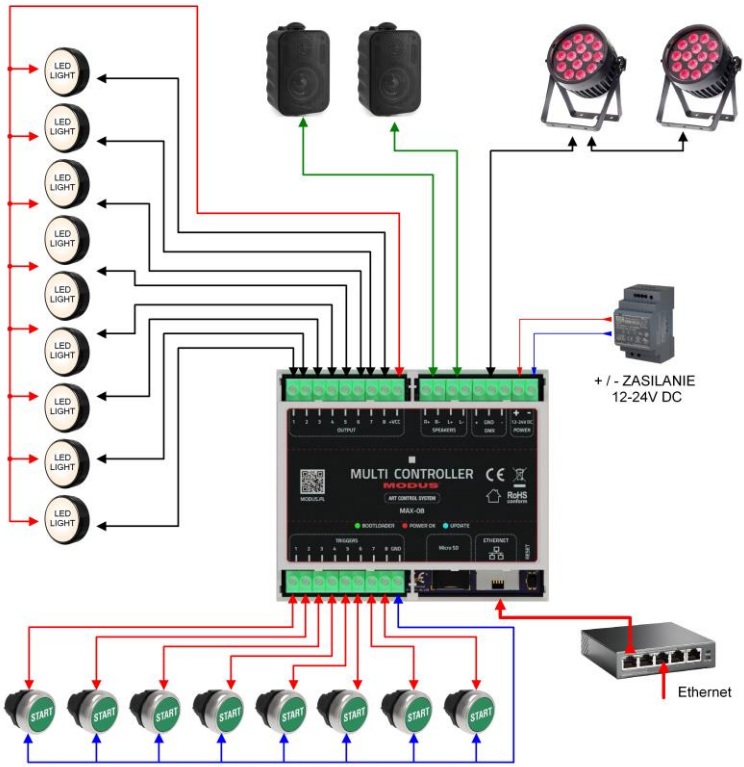
4. Description of Indicator Operation



The MODUS logo is backlit, and its color indicates:

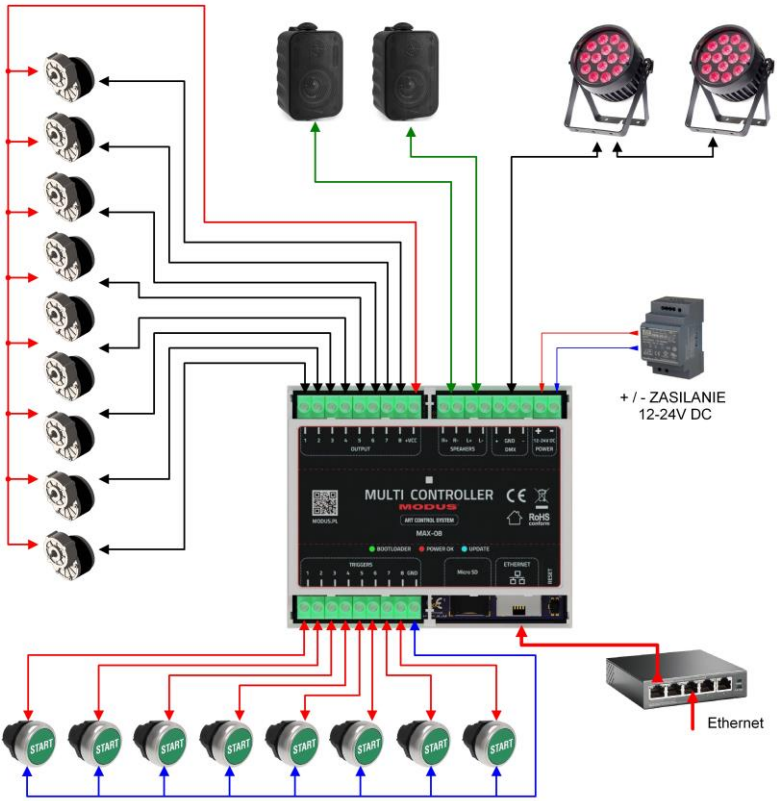
- **Red**: Normal module operation
- **Green**: The device is in bootloader mode. This is the initial state after powering on or resetting.
- **Blue**: The device is in firmware update mode

5. Connection Diagram for PWM LED Control



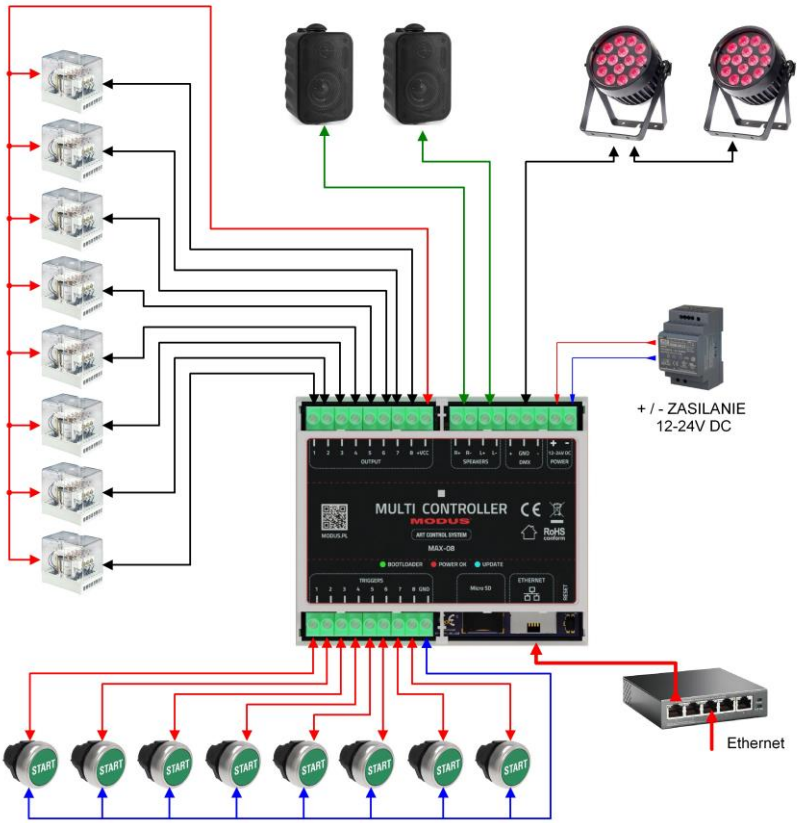
Example of connecting outputs for LED lighting control.

6. Connection Diagram for OC Motor Control



Example of connecting outputs for motor control,
e.g., moving elements in scenography, animatronics, etc.

7. Connection Diagram for OC Relay Control



Example of connecting outputs for relay control.

8. Triggering Scenarios

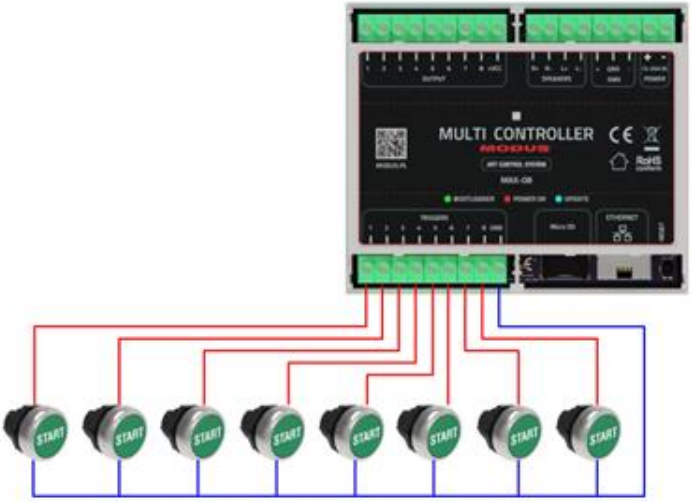
Scenarios can be triggered in three ways: via TRIGGERS inputs, DMX signal, or LAN network using Artnet sACN UDP MODUS protocol. The triggering method should be set in the MAX8 DevManager configuration program.

Examples of using external TRIGGERS:

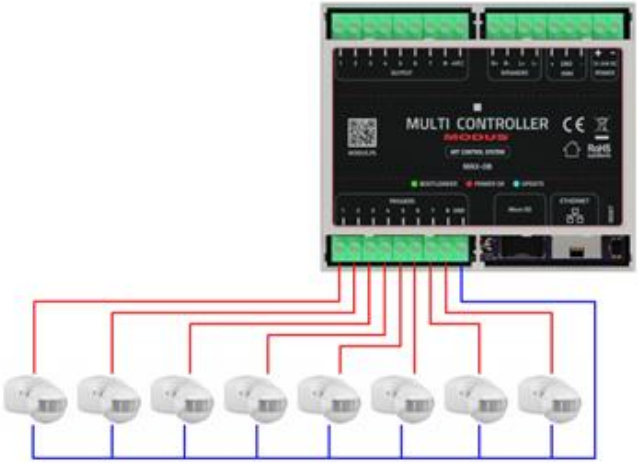
- Triggering programmed sequences with a light console or Artnet signal.



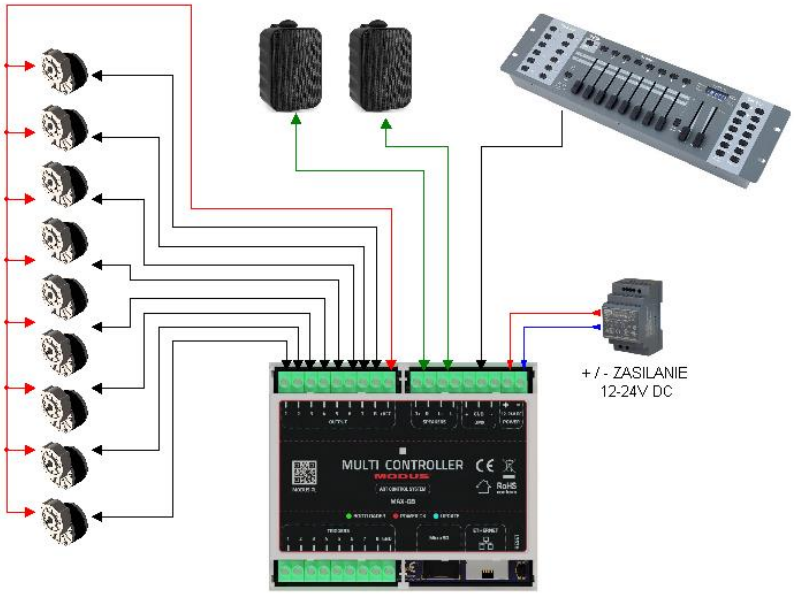
- Triggering programmed sequences using buttons



- Triggering programmed sequences using sensors



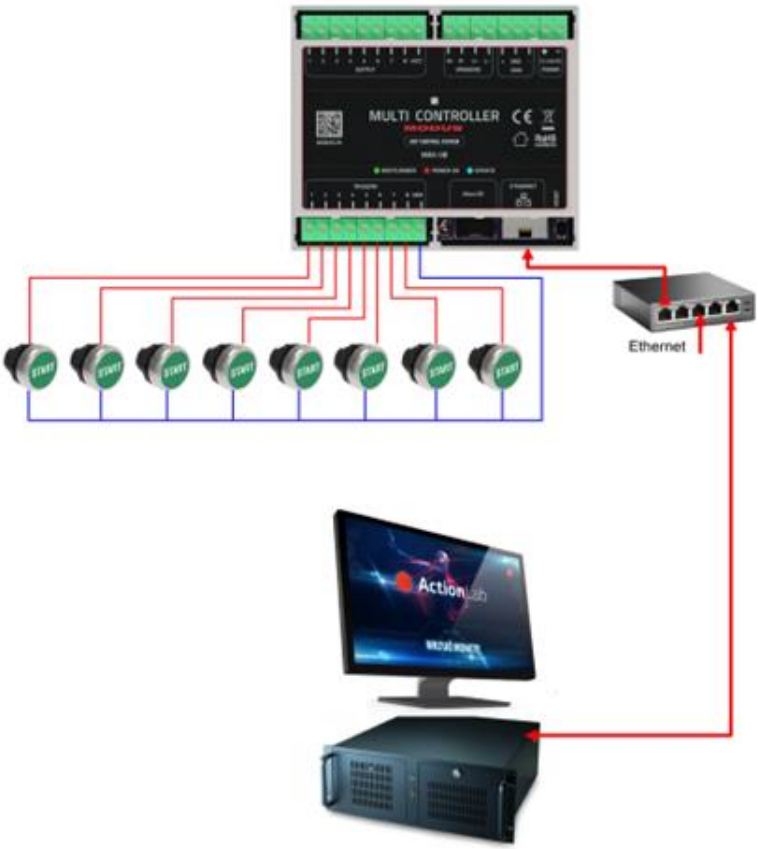
- Triggering programmed sequences using the DMX signal



9. Additional TRIGGERS Function

The controller allows the use of TRIGGERS to generate Artnet signals. Each TRIGGER can be assigned to a single DMX address. When a TRIGGER is activated, an Artnet signal is generated and sent to the LAN network. This means that buttons connected to the TRIGGERS inputs can be used to trigger other devices controlled via Artnet, such as triggering content from a media server, triggering scenes/programs from light mixers, starting special effects, etc.

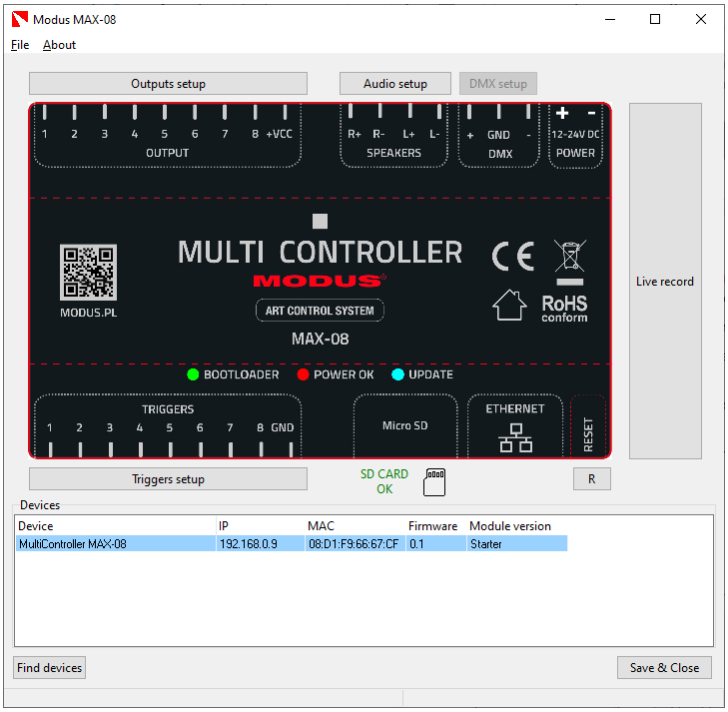
- Triggering content from the media server using buttons connected to the TRIGGERS input



10.Configuration

Configuration is done via the LAN network using the MAX8 DevManager configuration program.
The configuration computer and the controller must be in the same address group, e.g., 10.0.0.x, 192.168.1.x, etc.

The configuration program can be downloaded from www.modus.pl in the "DOWNLOADS" section. The program should be downloaded to the disk and run. After starting the program, the following dialog window appears:



By pressing the "Find devices" button, MAX-8 devices will be detected. Clicking on one of them will unlock the configuration options.

The device configuration is divided into several logical tabs:

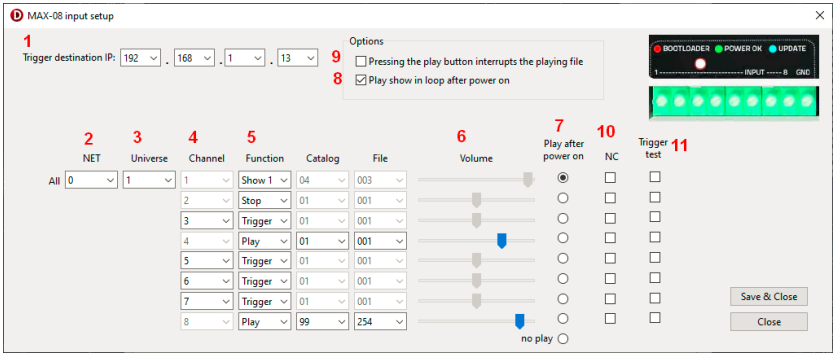
- **Inputs (Trigger)**
- **Outputs (Output)**
- **Audio Subsystem**
- **DMX**

Standard control channel settings:

Net and Universe – 0

- Channels 1-8 - Control Inputs (triggers)
- Channels 1 to 8 - PWM Outputs
- Channel 9 - Directory selection from 1 to 99 with audio files
- Channel 10 - Audio file selection 1-255
- Channel 11 - Volume in the range of 0-255
- Channel 12 - Playback – stop 0-127, Pause 128-191, start 192-255
- Channel 13 - Bass adjustment 0-255
- Channel 14 - Treble adjustment 0-255

Inputs (Trigger) – Configuration:



1. Trigger destination IP: IP to which Artnet packets will be sent
2. NET: NET parameter of the Artnet protocol
3. Universe: Universe parameter of the Artnet protocol
4. Channel: Artnet (DMX) channel assigned to Trigger input

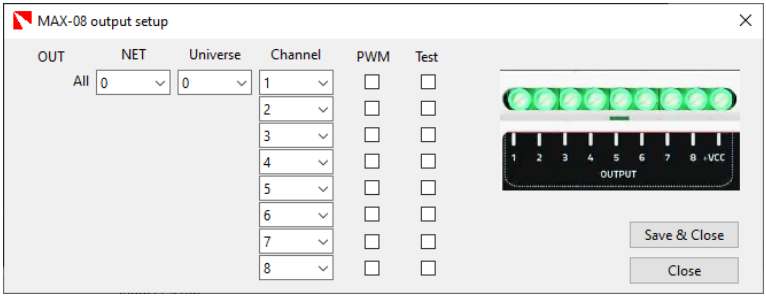
5. Function: functions executed when the button is pressed

- **none**: button inactive
- **Trigger**: pressing the button sends an Artnet packet on the channel selected in the Channel column and does not perform any other action
- **Play**: pressing the button will cause playback of the audio file selected in the File column from the directory selected in the Catalog column
- **Stop**: stops playback
- **Show** 1 – Show 8: plays the programmed show

6. Volume: playback volume of the file in Play function
7. Play after power on: selecting this option will start the chosen function first after power on
8. Play show in loop after power on: if this option is selected, when starting Show 1 - Show 8 after power on, it will be played in a loop
9. Pressing the Play button interrupts the playing file: if this option is selected, calling the Play function will interrupt playback of the previous file
10. NC: reverses the operation of the input. Activating the selected option will be triggered when the connection of the selected input to ground is interrupted. It should be turned on when using typical active infrared alarm sensors.
11. Selecting this option emulates the activation of the trigger. Deselecting emulates the deactivation of the trigger.

Changes must be confirmed by pressing the **Save & Close** button.

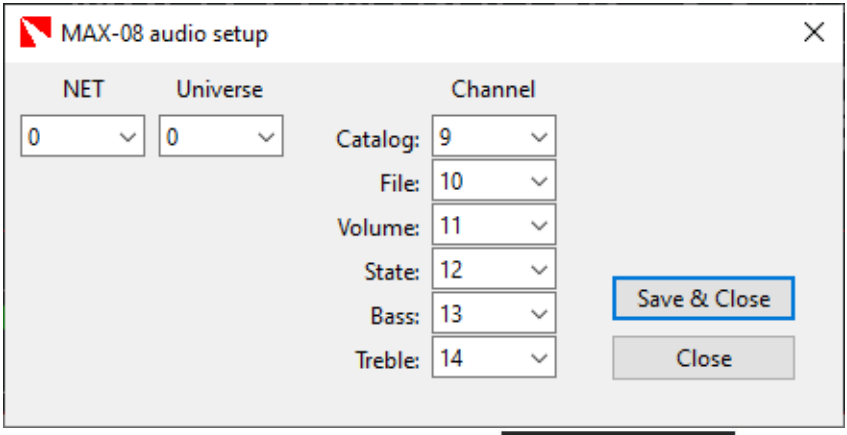
Outputs (Output) – Configuration:



- **NET**: Artnet protocol NET parameter
- **Universe**: Artnet protocol Universe parameter
- **Channel**: Artnet channel controlling the selected output
- **PWM**: Switching the output to PWM mode, e.g., for controlling LED strips
- **Test**: Checking the option sets the selected output to 100%

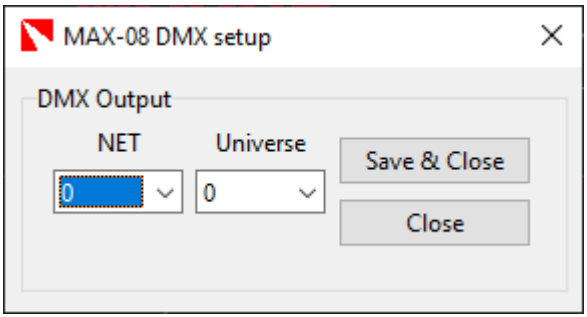
Changes should be confirmed by pressing the **"Save & Close"** button.

Audio Subsystem – Configuration:



- **NET**: Artnet protocol NET parameter
- **Universe**: Artnet protocol Universe parameter
- **Channel**: Artnet channel activating the selected option

DMX – Configuration:



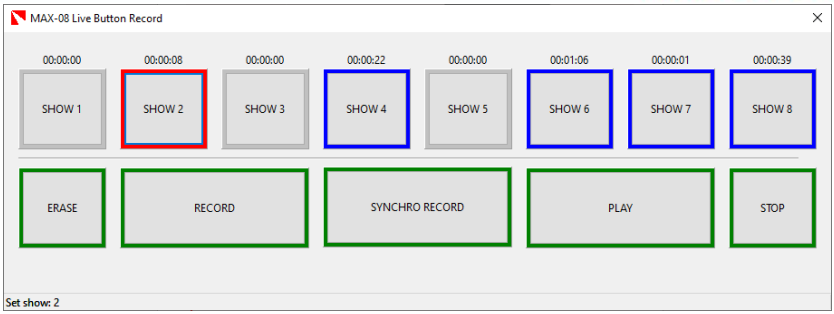
- **NET**: Artnet protocol NET parameter
- **Universe**: Artnet protocol Universe parameter

Selecting the appropriate NET and Universe parameters will transfer the incoming Artnet signal / convert to the DMX protocol

Restart: Restarts the device to the settings as when powered on

Live Record:

This option allows recording and playback of integrated shows controlling Audio, DMX, and PWM/OC outputs synchronously.



The first step is to select a **Show**.

If the button is gray, the selected show is empty.

The system records Artnet packets for NET=0 and Universe=0.

Activation of the ERASE, RECORD, and SYNCHRO RECORD options is done by double-clicking the button.

ERASE: Pressing the button will permanently delete the Show.

RECORD: Pressing the button starts recording the Art-net signal. Recording will begin automatically upon receiving any Artnet frame.

SYNCHRO RECORD: Activating this option starts recording the Artnet protocol. Recording will begin when a frame containing any channel with a value greater than 0 is received.

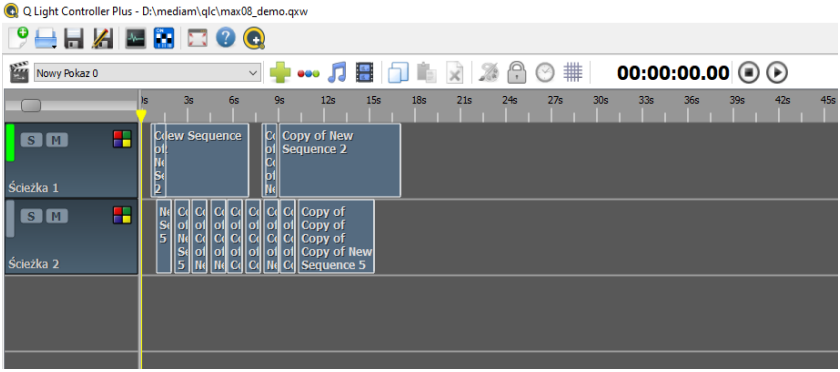
PLAY: Plays the selected Show.

STOP: Stops recording or playing the show.

11.Recording a Show

The show or work scenario is saved in the root directory of the device's SD card. The playback scenario can be prepared in any controller or computer program that sends Artnet. The device must be configured so that the ArtNet signal is sent to the controller's address on NET 0 and Universe 0. (In some programs, Universe 0 is marked as 1).

The simplest way to prepare a work scenario is by using the timeline feature of the free QLC software, available for download at https://www.qlcplus.org/.



To record a show on the controller:

- Press RECORD or SYNCHRO RECORD in the software
- Start playback of the programmed show on the device/program sending Artnet

12.Uploading Audio Files

Preparing the SD Card:

- The SD card should be formatted as FAT32.
- Create directories on the card where the files will be stored.
- Audio files should be in MP3 format: 128kbps, 44100Hz, 16-bit.

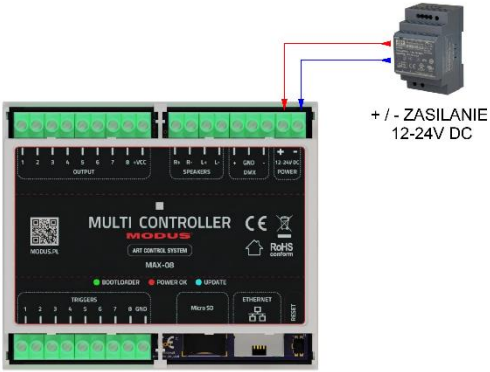
- Maximum number of directories: 99.
- Maximum number of files per directory: 255.
- Naming Directories and Audio Files:
- Directory names must be in a two-digit format, e.g., 01, 02, 0… 99.
- File names must start with a number and can contain only the number, e.g., 001.mp3, 002.mp3, or you can keep the original file name and add the extension in the following way: 001Filename.mp3, 002Filename.mp3 … 255Filename.mp3.

Files can be uploaded directly to the memory card or via FTP connection. FTP connection details:

- **User**: ftp
- **Pass**: ftp
- **Connection type**: passive mode

13.Power Supply

The device can be powered in two ways: via an external power supply connected to the power connector as shown in the diagram. The recommended power supply, provided by the manufacturer, should be used to power the converter, e.g., HDR-100-1.



14.Factory Reset

The MAX-08 MODUS device has the ability to restore the default settings that it comes with when purchased.

Locate the RESET button on the device's casing (highlighted in the diagram below).



Przycisk Reset

To restore the default settings, follow these steps:

1. Turn off the device.
2. Press the RESET button.
3. Turn on the device while holding the RESET button until the logo backlight starts flashing, changing color from red to green and back.
4. Release the RESET button.
5. Turn off the device.

When you reconnect the power, the factory settings will be restored. By default, the device is set to DHCP mode.

15.IP Address

By default, after purchase, after restoring factory settings, or in the absence of an SD card, the device sets itself to DHCP mode. The address can be read using the MAX8 DevManager program or another program such as DMXWorkshop. To set a static address for the device, create a file named config.json in the root directory of the SD card with the following entry:

```
{
"IP":  "192.168.0.23",
"MASK":"255.255.255.0",
"GATE": "192,168,0,1"
}
```

After uploading the file, perform a reboot of the module by disconnecting and reconnecting the power or by briefly pressing the RESET button.

16.Maintenance and Repairs

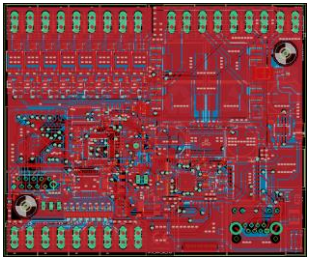
The device does not contain any user-serviceable parts. In case of malfunction, contact the seller or manufacturer.

Warning!!

Any self-repairs may cause irreversible damage to the device or create other hazards.

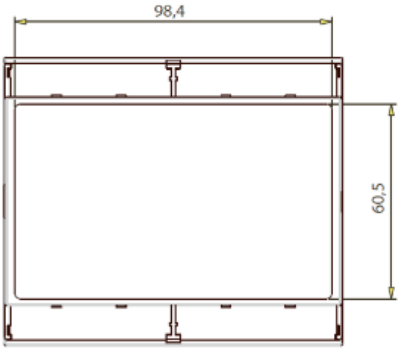
17.Enclosures and Dimensions

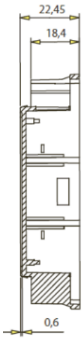
The device is available in three housing versions:



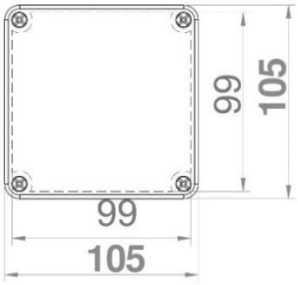
1. Only PCB, intended for self-assembly in any enclosure

2. Standard Enclosure: DIN 35mm





3. Optional Outdoor Enclosure: IP67





18.Technical Specifications

- Outputs/Inputs: 8 x OC or PWM
  1 x DMX512
  1 x stereo audio output 2x50W
  1 x LAN
  8 x trigger
- Memory: SD card
- Power Supply: 12-24V DC, 1000mA
- Enclosure: standard for mounting on a DIN rail
- Dimensions: 90/31/104 mm
- Configuration: via MAX8 DevManager software.

Note:

The manufacturer reserves the right to make changes to the device's functionality and operation to improve the product.

19.Contact Information

www.modus.pl

biuro@modus.pl

Date: January 6th, 2024

EC Declaration of Conformity

With the CE marking on a product the manufacturer ensures that the product is in conformity with the essential requirements of the applicable EC directives. The letters "CE" stand for "Conformité Européenne" ("European Conformity").

Essential characteristics the product complies:

- **ARL-08**: Artnet Relay – module 8 relays controlled by Artnet and Modus protocol.

We have verified that the product complies with all relevant “essential requirements” (e.g., safety, health, environmental protection requirements) of the applicable directive(s) bellow:

- Low voltage (2006/95/CE)
- Electromagnetic compatibility (2004/108/CE)

We declare that our products (lighting control equipments) comply with the following specification.
and bears CE mark in accordance with the provision of the Electromagnetic Compatibility (EMC) Directive
89/336/EEC.
EN55014-1: 1993, EN61000-3-2: 1995, EN61000-3-3: 1995, EN55014-2: 1997
CATEGORY II
EN61000-4-2: 1995, EN61000-4-3: 1995, EN61000-4-4: 1995, EN61000-4-5: 1995, EN61000-4-6: 1995, EN61000-4-11: 1994, EN55015: 1993, EN50082-1: 1997, EN61000-3-2: 1995
EN61000-3-3: 1995

Harmonized Standard
EN60598-1: 1993
Safety of household and similar electrical appliances
Part 1: General requirements
Following the provisions of the Low Voltage Directive 73/23/EEC and 93/68/EEC.

Mr. Włodzimierz Duval (President)
Behalf of the Company