Product Manual

DMX Full-Color Isolated Controller

Model · HADMX64

Product version · V1.0



1. Product Overview

HADMX64 is a professional-grade DMX full-color isolated controller. It supports 8 channels of DMX512/SPI output, featuring independent power supply + optocoupler isolation for each channel, thoroughly solving the problem of mutual interference between signals on different channels. It supports dual modes: online (Art-Net) and offline (SD card). The optional HA version can be integrated into smart home systems, making it suitable for various professional lighting and illumination projects.

2. Features

- Fully isolated design: Each of the 8 DMX512/SPI output channels has an independent power supply + optocoupler isolation. The output ports do not share a common ground, so interference on a single channel does not affect others. The side network port and XLR console signal are also isolated.
- Strong load capacity: In offline/console mode, SPI supports 1024 ICs per channel, and DMX512 supports 170 ICs per channel; in online mode, SPI supports 680 ICs per channel, and DMX512 supports 170 ICs per channel.
- Art-Net protocol: Supports the international standard TCP/IP network protocol, allowing direct playback of programs using software such as Madrix.
- Online/Offline dual mode: Insert an SD card for offline use; remove the SD card for online use. Supports high-speed SD cards (up to 64G), with support for switching up to 100 program effects.
- Intuitive operation: Equipped with a 4-digit digital display and four buttons, supporting cascaded synchronization of multiple devices (master-slave control).
- DMX512 console connection: Supports console connection via XLR or RJ45 network cable, occupying 6 channels to achieve adjustment of programs, speed, brightness, and RGB grayscale.
- HA smart linkage: Built-in 2.4G Wi-Fi, native ESP integration with Home Assistant (automatic entity discovery), enabling remote control and scene linkage with other smart devices (such as lights and curtains), and supporting the MQTT protocol.

3. Application Scenarios

1. Professional stages and entertainment venues: Bars, KTV, stage light shows, etc., with real-time control via online software such as Madrix/Resolume.

2. Large-scale outdoor lighting projects: Long-distance transmission, thoroughly solving signal interference and ground loop issues in complex on-site environments.

3. Commercial spaces and smart homes: After configuring the HA version, seamlessly integrates with the Home Assistant system to achieve intelligent linked control of RGB light strips and light films.

4. Advertising light boxes and hostless displays: No computer connection required; runs offline using an SD card, suitable for independent operation scenarios such as light boxes and exhibition displays.

4. Structural Interfaces

- Display and Control: 4-digit digital display, Parameter (SET/MODE/Speed-/Speed+) buttons, indicator lights (Power/Sync/Error).
- Data Interfaces: SD card slot, standard RJ45 network port (NET IN / NET OUT), DMX512 IN / OUT (supports network port and XLR connector).
- Output Terminals: 8 output ports (OUT1~OUT8), each port includes data lines (D+/DAT) and ground line (GND).
- Power Interface: AC110-220V standard power input.

5. Technical Parameters

Parameter Item	Specification Description
Product Model	HADMX64
Supply Voltage	Wide voltage input AC110-220V
Dimensions	300 x 150 x45 mm
Weight	Net weight 998g
Rated Power	4W
Load Capacity (Offline/Console)	SPI/TTL: 1024 ICs per channel, 8192 ICs in total DMX512: 170 ICs per channel, 1360 ICs in total
Load Capacity (Online)	SPI/TTL: 680 ICs per channel, 5440 ICs in total DMX512: 170 ICs per channel, 1360 ICs in total
Grayscale Levels	32-65536 levels
Supported Software	Offline: LedMagic software, etc. Online: Madrix/Resolume6/Arkaos, etc.
Operating Temperature	-10℃ ~ 45℃
Output Protocol	SPI/TTL serial protocol, network protocol (Art-Net), DMX512/1990 and extended protocols

HA Version Network	2.4G Wi-Fi, supports Home Assistant ESP integration auto-discovery, supports MQTT protocol

6. Installation and Wiring

Important Notice: When connecting lights, the data line of 1 port must be connected to the ground line of that port. It is strictly prohibited to mix-connect to the ground line of other ports. The data and ground lines of each port are completely isolated!

- Single-wire IC lights: Connect the light data line to the controller port DAT, and the negative line to the controller port GND.
- DMX512 lights: Connect the light signal A line to the controller port D+, and the signal B line to the controller port D-.
- TTL signal: The controller must be grounded with the light (connect the controller's ground output to the light's ground).
- Networked daisy chain: Use a network cable to connect the NET OUT of the first controller to the NET IN of the next one, and so on; the first unit is the master.
- Console connection: Connect to a DMX512 console via XLR or RJ45 network cable, occupying 6 channels (program, overall speed, overall brightness, red, green, blue).

7. Configuration and Usage

Networked usage settings:

Press and hold the SET key while powering on; the screen displays HXXX to enter the settings interface. Press MODE to switch parameters, use SPEED +/- to adjust values, and press SET to save and exit after configuration is complete.

- HXX: Number of points loaded per port (H170/H340/H510/H680).
- FXX: Maximum number of spaces on the serial line (F008~F256, default F256).
- C19X: Last segment of the controller IP address (the first three segments default to be the same as the host).
- d51X: Number of channels supported per space (default d510).

Offline usage settings:

1. The SD card must be formatted in FAT format (formatting is required before every copy operation).

2. In LedMagic software, select model T-8000-UCS1903, 1903B, 1909, 1912 to create effects, generate a .led file and copy it to the SD card.

3. After powering off, insert the SD card, and power on again to play offline.

DMX512 code writing function (optional):

1. Press the SET key to select chip A512, wait 8 seconds to save.

2. Connect the fixture's D+/D-/GND, and press SPEED- and SPEED+ simultaneously to enter code writing mode.

3. Press MODE to select the chip manufacturer (CH01~CH07), number of segments (J003), and start address (b001).

4. Long press the SET key to execute code writing; the screen displays P0-- to P1-- indicating completion.

8. Communication Protocol

The communication of this product is not Modbus protocol; specific support is as follows:

- Art-Net protocol: Transmits via network port with 100M/1G adaptive speed, supporting standard network lighting control.
- DMX512 protocol: Complies with the DMX512/1990 international standard protocol and extended protocols.
- MQTT protocol (HA version only): Supports Wi-Fi access, publishes entities via MQTT Discovery, and enables data interaction with smart home systems.
- SPI/TTL serial protocol: Used for direct connection to single-wire IC lighting fixtures.

9. Applicable Conditions and Limitations

- Environmental limitations: Operating temperature is -10℃~45℃.
- Loaded frame rate limitations: When the port is loaded with 512 lights, the playback speed can reach 30 frames/second; when loaded with more than 512/1024 lights, the frame frequency automatically decreases as the number of lights increases.
- Isolation limitations: The power supply, signal lines, and ground lines of each channel are isolated from each other. Do not mix ground lines across ports when wiring.
- HA network limitations: The HA version only supports 2.4G Wi-Fi networks and does not support the 5G band.

10. Troubleshooting

- Display E-15 error: ① SD card is not installed properly; ② Display is damaged.
- After power-on, the lighting fixtures show no change, and the fault light (ERROR) blinks:

① The SD card is empty, with no effect files.

② The .led file on the SD card does not match the controller model; it needs to be re-selected and created using the T-8000- series.

③ The SD card has not been formatted to FAT format.

④ The SD card is damaged; replace it and test.

- Indicators are normal, but the lighting fixtures have no effect:

① The signal line is not correctly connected.

② When connecting TTL signals, it is not grounded with the controller.

③ The chip model in the effect file is inconsistent with the chip of the current lighting fixture.

11. Safety Maintenance

- Hot plugging is strictly prohibited: Before plugging or unplugging the SD card each time, the controller power must be disconnected first.
- When connecting high voltage (AC110-220V), please pay attention to electrical safety to avoid electric shock.
- When wiring for the project, please ensure that the ground wire of the terminal lighting fixture strictly corresponds to the controller port; do not mix connections.

12. Others

This product series adds a version with full signal isolation, using 8 independent power supplies + optocoupler isolation. In ordinary controllers, interference from each channel is fed back through the signal lines, causing all output ports to flicker without cause and become uncontrollable. The fully isolated version of the controller can thoroughly solve the problem of mutual interference between channels at the engineering site.

13. Packing List

- DMX Full-Color Isolated Controller HADMX64 x 1