



**BrightSign®**

# HARDWARE MANUAL

MD435

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# OVERVIEW

The BrightSign MD435 media player can be used to decode images, audio, and 4K video for digital-signage and kiosk applications. In addition to driving audio/video devices, these players can be controlled with various networked and built-in interfaces. The MD435 includes a Real Time Clock (RTC) with supercapacitor that backs up the clock settings when it is power cycled.

This manual specifies the hardware interfaces and operational theory of the MD435.

**MD435**

<b>FRONT</b>	<b>BACK</b>
USB-A 2.0	Service button (SVC)
MicroSD card slot	Reset button (Reset)
Audio out (3.5mm stereo or dual mono analog audio out)	HDMI out (UHD/4K)
Single antenna WiFi module	LAN/Ethernet 10/100
12V@1.5A power connector	

# HARDWARE INTERFACES

This section describes the characteristics and operation of all connectors on the MD435.

## LAN/Ethernet

This connection is used to connect an ethernet cable for internet access. The MD435 wired ethernet connection is capable of 10/100 Base-T Mbps.

## HDMI Output

The MD435 can output video resolutions up to 3840x2160x60p.

## Power Connector

The power connector for the MD435, which connects the power cord to the device, is rated for 12V@1.5A. The connector is used for power input only—it does not transfer data.

## 3.5mm Audio Connector

The MD435 has a dedicated 3.5mm stereo or dual mono analog audio out port

## USB-A

A USB-A 2.0 port connects to USB-compatible devices.

## Built-in WiFi

The MD435 has a Realtek single antenna WiFi module which supports dual-band Wi-Fi (2.4GHz and 5GHz).

## ENVIRONMENTAL AND POWER USAGE

The MD435 is designed for sustained ambient temperatures between 0°C and 50°C. Non-operational (transportation or storage) temperatures can range from -20°C to 85°C. Units should be allowed time to acclimate before being powered up.

Operating the players above 50°C ambient for prolonged periods may reduce the operational life of the product and result in intermittent resetting of the device.

### **Important**

Exposing a cold player to warm air at high relative humidity may cause water to condense inside the player, leading to component failure. Damage due to such internal condensation is not covered by warranty. If a player is cold, allow several hours for it to acclimatize to ambient conditions before applying power.

### **Power Adaptor**

The MD435 is supplied with 12V@1.5A power supply.

# THEORY OF OPERATION

This section describes how specific components operate on the MD435.

## On-Board Switch / SVC button

The on-board switch is connected to the GPIO02, which is pulled low when the service (SVC) button is pressed. Conversely, a pull-up on the button normally sets the GPIO02 to be pulled high.

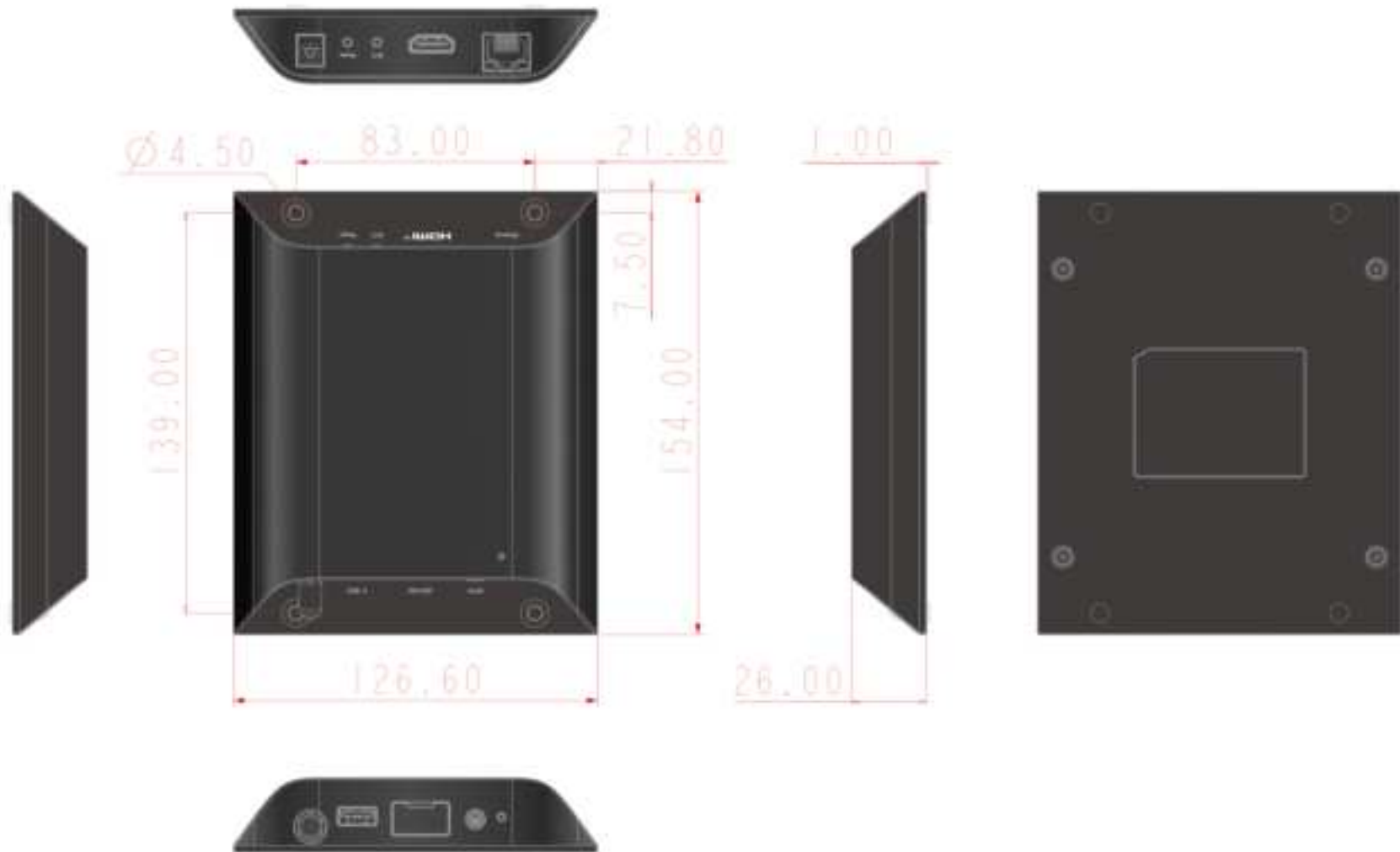
## Reset Switch/GPIO Button

The on-board switch is connected to the reset circuit. Pressing down the reset button will send an initial signal to the system software and holding the reset button low for approximately 4 seconds will cause a hard reset.

## MicroSD Slot

The MD435 has one MicroSD slot, which supports transfer modes up to UHS-1 DDR50 (50MB/s). There is no inherent limit on the storage capacity of MicroSD cards used with the player.

## DIMENSIONS





## MOUNTING PROCEDURE

The MD435 can be mounted on a wall using the sealed mounting holes on the front and back. It is recommended that you mount the device using four screws (one for each hole). The screws should have a major diameter between 3.5mm and 4.2mm.

**Nails should not be used to mount the device.**

## FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This equipment may not cause harmful interference, and (2) this equipment must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not covered in this Guide must be approved in writing by the manufacturer's Regulatory Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.

### RF Exposure Warning

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment. The equipment must not be co-located or operating in conjunction with any other antenna or transmitter.

## INDUSTRY CANADA STATEMENT:

This equipment complies with ISED's license-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this equipment must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

## RADIATION EXPOSURE STATEMENT:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with greater than 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.