TB50

Multimedia Player

Specifications

Change History

Document Version	Release Date	Description
V1.2.3	2026-01-05	• Updated the certification information. • Updated the playback performance. • Updated the indicator status description. • Updated the media decoding specifications.
V1.2.2	2025-08-29	• Updated the certifications. • Updated the features description. • Updated the connector description. • Updated the media decoding specifications.
V1.2.1	2024-10-20	Updated the feature description.
V1.2.0	2024-07-24	• Updated the feature description. • Updated the RUN indicator description. • Added the recommended supply power. • Updated the packing information. • Updated the media decoding specifications.
V1.1.0	2024-05-30	• Updated the introduction. • Updated the feature description. • Updated the connector description. • Updated the media decoding specifications.

Introduction

The TB50 is a new generation of multimedia player created by NovaStar for full-color LED displays. This multimedia player integrates playback and sending capabilities, allowing users to publish content and control LED displays with a computer, mobile phone, or tablet. Working with our superior cloud-based publishing and monitoring platforms, the TB50 enables users to manage LED displays from an Internet-connected device anywhere, anytime.

Support for multi-screen synchronous playback and synchronous and asynchronous modes makes this multimedia player a perfect fit for a wide range of applications.

Thanks to its reliability, ease of use, and intelligent control, the TB50 becomes a winning choice for commercial LED displays and smart city applications such as fixed displays, lamp-post

displays, chain store displays, advertisement players, retail store displays, door head displays, shelf displays, and much more.

Certifications

NBTC, IMDA, PSB, FAC DoC, ENACOM, ICASA, SRRC, EAC DoC, EAC RoHS, RCM, CQC, FCC, UL, IC, KC, CE, UKCA, CB, MIC, PSE, NTRA, PSTI

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.

Features

Output

- Loading capacity up to 1,300,000 pixels
  - Maximum width: 4096 pixels, maximum height: 4096 pixels
  - Non-standard resolutions are supported in both asynchronous and synchronous modes and the pixel clock of the custom resolutions cannot exceed 153 MHz.
- 2x Gigabit Ethernet ports

  All these two ports serve as primary by default. Users can also set one as primary and the other as backup.
- 1x Stereo audio connector

  The audio sample rate is fixed at 48 kHz. If NovaStar's multifunction card is used for audio output, audio with a sample rate of 48 kHz is required.
- 1x HDMI 1.3 connector

  Maximum output: 1920×1200@60Hz and support for HDMI loop

Input

- 1x HDMI 1.3 connector

  In synchronous mode, this connector is used as the video source which can be scaled to fit the entire screen automatically.

- 2x Sensor connectors

  Connect to the brightness sensor or temperature and humidity sensor.

Control

- 1x USB 3.0 (Type A) port allowing for USB playback, firmware upgrade and storage expansion
- 1x USB (Type B) port connecting to the control computer for content publishing and screen control
- 1x Gigabit Ethernet port connecting to the control computer, a LAN or public network for content publishing and screen control

Performance

- Powerful processing capacity
  - Quad-core ARM A55 processor @1.8 GHz
  - Support for 4K video decoding
  - 1 GB of onboard RAM
  - 32 GB of internal storage
- Flawless playback

  Support for playback of 1x 4K, 2x 1080p, 5x 720p, 6x 480p, or 6x 360p videos

  Note: Videos with resolutions between 2K and 4K will be converted into 4K videos.

Functionality

- All-round control plans
  - Enables users to publish content and control screens from a computer, mobile phone, or tablet.
  - Allows users to publish content and control screens from anywhere, anytime.
  - Allows users to monitor screens from anywhere, anytime.
- Wi-Fi AP and Wi-Fi Sta can be turned on at the same time
  - Wi-Fi AP

User terminal devices can be connected to the built-in Wi-Fi hotspot of the multimedia player. The default SSID is "Model+Last 8 digits of SN" and the default password is printed on the SSID label.

- Wi-Fi AP+Wi-Fi Sta

  Users can connect the multimedia player to a Wi-Fi network and turn on the Wi-Fi hotspot at the same time.

- Synchronous and asynchronous modes
  - In asynchronous mode, the internal video source works.
  - In synchronous mode, the HDMI video source works.
- Synchronous playback across multiple screens

  Enabling synchronous playback halves the number of videos that can be played simultaneously within the decoding capability of the device.
  - NTP time synchronization
  - GPS time synchronization (The specified 4G module must be installed.)
  - RF time synchronization (The specified RF module must be installed.)
- Support for 4G modules
  - The device ships without a 4G module. Users have to purchase 4G modules separately if needed.
  - Network connection priority: Wired network > Wi-Fi network > 4G network

    When multiple networks are available, the device will choose a network according to the priority order.

Appearance

Front Panel

Name	Description
SWITCH	Switches between synchronous and asynchronous modes.

Name	Description
	• Staying on: Synchronous mode • Off: Asynchronous mode
SIM CARD	SIM card slot Capable of preventing users from inserting a SIM card in the wrong orientation.
RESET	Factory reset button Press and hold this button for 5 seconds to reset the product to its factory settings.
USB	USB (Type B) port Connects to the control computer for content publishing and screen control.
LED OUT	Gigabit Ethernet outputs

Rear Panel

Name	Description
SENSOR	Sensor connectors Connect to brightness sensors or temperature and humidity sensors.
	Reserved RF antenna connector
HDMI	1x HDMI 1.3 OUT • Support for HDMI loop • The pixel clock cannot exceed 153 MHz. • Maximum output resolution: 1920×1200@60Hz • In asynchronous mode, output resolutions support 400×4096@60Hz and 480×4096@60Hz. • Support for custom resolutions: – Custom pixel width range: 512~4096 (512×512@60Hz~4096×560@60Hz) – Custom pixel height range: 512~4096 (512×512@60Hz~560×4096@60Hz) • HDCP 1.4 compliant • No support for interlaced signal output
	1x HDMI 1.3 IN

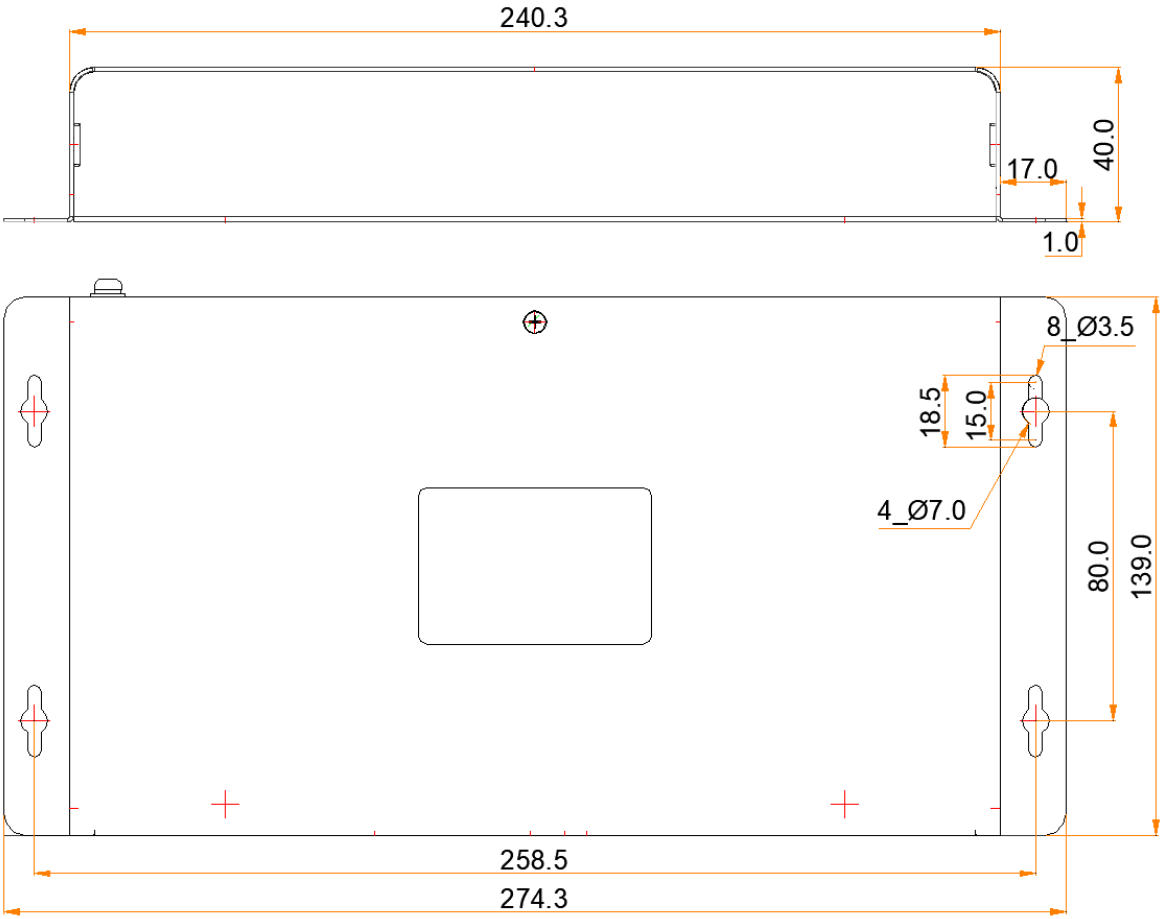
Name	Description
	• The pixel clock cannot exceed 153 MHz. • Maximum input resolution: 1920×1200@60Hz • HDCP 1.4 compliant • No support for interlaced signal input • Support for custom resolutions: – Custom pixel width range: 800~4096 (800×600@60Hz~4096×560@60Hz) – Custom pixel height range: 600~4096 (800×600@60Hz~560×4096@60Hz) Note: The resolution of HDMI IN can be customized by changing the preset EDID, so the external source must support custom resolutions. • In synchronous mode, HDMI is used for video input and users can enable full-screen scaling to make the image to fit the screen automatically. Requirements for full-screen scaling in synchronous mode: – 512 pixels ≤ video source width ≤ 2048 pixels – 512 pixels ≤ video source height ≤ 2048 pixels – Maximum resolution: 1920×1080 – The image can only be scaled down and cannot be scaled up. Note: The pixel width and height of the video source must be greater than or equal to the pixel width and height of the screen, respectively.
WiFi	Wi-Fi antenna connector (2.4 GHz Wi-Fi supported) Support for switching between Wi-Fi AP and Wi-Fi Sta
ETHERNET	Gigabit Ethernet port Connects to the control computer, a LAN or public network for content publishing and screen control.
COM 2	GPS antenna connector
USB 3.0	USB 3.0 (Type A) port Allows for USB playback, firmware upgrade and storage expansion • Supported file systems: FAT32/NTFS • USB drive capacity range: 2 GB to 128 GB • The size of a single file must be greater than 0 KB and less than 4 GB.
COM 1	4G antenna connector
AUDIO OUT	3.5 mm audio output connector Note: Three-pole audio jacks can be connected.
100-240V~, 50/60Hz, 0.6A	Power input connector

Name	Description
ON/OFF	Power switch

Indicators

Name	Color	Status	Description
PWR	Red	Staying on	The power supply is working properly.
SYS	Green	Flashing once every 2s	The operating system is functioning normally.
		Staying on/off	The operating system is malfunctioning.
CLOUD	Green	Off	The device is not connected to the Internet.
		Staying on	The device is connected to the Internet and the connection is available.
		Flashing once every 2s	The device is connected to VNNOX and the connection is available.
		Flashing once every second	The device is upgrading the operating system.
		Flashing once every 0.5s	The device is copying the upgrade package or files from the USB drive.
RUN	Green	Flashing once every 4s	The FPGA has no video source.
		Flashing once every 0.5s	The FPGA is functioning normally.
		Staying on/off	The FPGA loading is abnormal.

Dimensions



Tolerance: ±0.3 Unit: mm

Specifications

Electrical Parameters	Input power	100–240V~, 50/60Hz, 0.6A
	Maximum power consumption	18 W
	Recommended supply power	25 W
Storage Capacity	RAM	1 GB
	Internal storage	32 GB
Operating Environment	Temperature	–20°C to +60°C
	Humidity	0% RH to 80% RH, non-condensing

Storage Environment	Temperature	−40°C to +80°C
	Humidity	0% RH to 80% RH, non-condensing
Physical Specifications	Dimensions	274.3 mm × 139.0 mm × 40.0 mm
	Net weight	1234.0 g
	Gross weight	1653.6 g Note: It is the total weight of the product, accessories and packing materials packed according to the packing specifications.
Packing Information	Dimensions	385.0 mm × 280.0 mm × 75.0 mm
	Accessories	• 1x Wi-Fi omnidirectional antenna • 1x AC power cord • 1x QR code • 1x Certificate of Approval
IP Rating	IP20 Please prevent the product from water intrusion and do not wet or wash the product.	
System Software	• Android 11 operating system software • Android terminal application software • FPGA program	

The amount of power consumption may vary depending on various factors such as product settings, usage, and environment.

Media Decoding Specifications

Image

Category	Codec	Resolution	Format	Remarks
JPEG	JFIF file format 1.02	64×64 pixels to 4096×2304 pixels	JPG, JPEG	Support for interlaced scan only Support for SRGB JPEG Support for Adobe RGB JPEG
BMP	BMP	64×64 pixels to 4096×2304 pixels	BMP	N/A

Category	Codec	Resolution	Format	Remarks
GIF	GIF	64×64 pixels to 1920×1088 pixels	GIF	At a resolution of 1280×720, the supported frame rate range is 1fps to 30fps. At a resolution of 1920×1088, the supported frame rate range is 1fps to 10fps.
PNG	PNG	64×64 pixels to 4096×2304 pixels	PNG	N/A
WEBP	WEBP	64×64 pixels to 4096×2304 pixels	WEBP	N/A

Video

Codec	Resolution	Max Frame Rate	Max Bit Rate (Ideal Case)	Format
H.264	64×64 pixels to 4096×2304 pixels	30fps	80Mbps	MP4, AVI, MKV, MOV
H.265/HEVC	64×64 pixels to 4096×2304 pixels	60fps	100Mbps	MP4, MKV, MOV
MPEG4	64×64 pixels to 1920×1088 pixels	30fps	38.4Mbps	MP4, AVI, MKV, MOV
VP8	64×64 pixels to 1920×1088 pixels	30fps	38.4Mbps	MKV, WEBM
VP9	64×64 pixels to 4096×2304 pixels	60fps	80Mbps	MKV, WEBM

Notes and Cautions

FCC Caution

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: 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.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC Caution

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: 1) L'appareil ne doit pas produire de brouillage; 2) L'appareil doit accepter tout brouillage

radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

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

Cet équipement est conforme à l'exposition aux rayonnements Industry Canada limites établies pour un environnement non contrôlé.

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cetéquipementestconforme Canada limitesd'exposition aux radiations dans un environnement non contrôlé. Cetéquipementdoitêtreinstallé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

Cautions

This is Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

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Statement

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