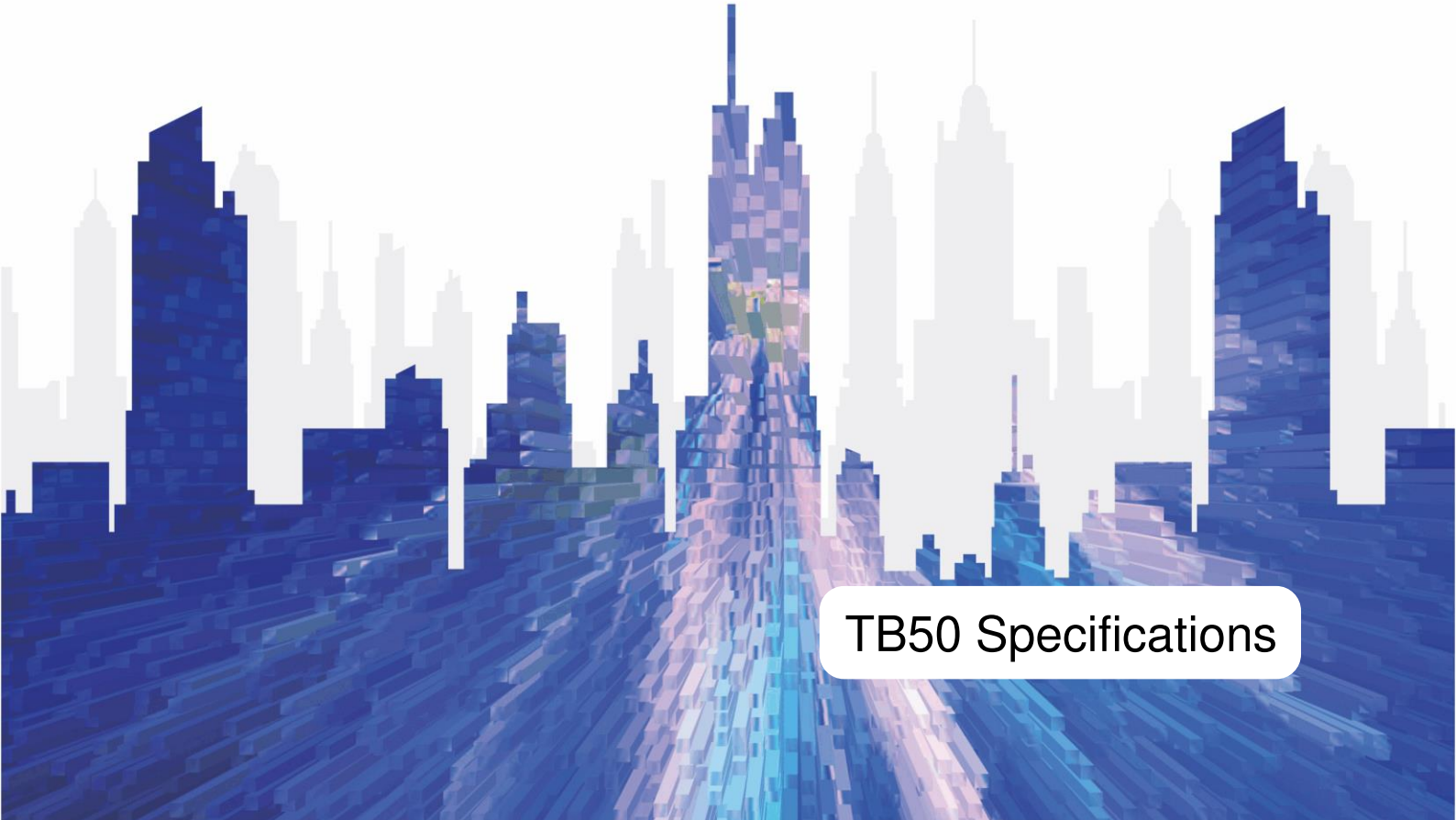
Taurus Series
Multimedia Player



TB50 Specifications

Change History

Document Version	Release Date	Description
V1.0.6	2023-06-14	Updated the connector descriptions.
V1.0.5	2022-11-18	Updated the certification information.
V1.0.4	2022-06-10	• Added a description of RF synchronization. • Added notes and cautions. • Updated the certification information. • Updated the indicator descriptions. • Updated the accessory descriptions.
V1.0.2	2021-12-17	• Updated the descriptions of the USB (Type B) port and Gigabit Ethernet port. • Added the gross weight of the product. • Added a note for the power consumption.
V1.0.1	2021-09-30	• Added certification information. • Updated the description of the playback performance. • Updated net weight.
V1.0.0	2021-07-30	First release

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, mirror displays, 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, UL Smark, CQC, FCC, UL, IC, KC, CE, UKCA, CB, MIC, PSE, NOM

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

- 2x Gigabit Ethernet ports

  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 of the internal source is fixed at 48 kHz. The audio sample rate of the external source supports 32 kHz, 44.1 kHz, or 48 kHz. If NovaStar's multifunction card is used for audio output, audio with a sample rate of 48 kHz is required.

- 1x HDMI 1.4 connector

Maximum output: 1080p@60Hz, support for HDMI loop

Input

- 1x HDMI 1.4 connector

  In synchronous mode, video sources input from this connector can be scaled to fit the entire screen automatically.

- 2x sensor connectors

  Connect to brightness sensors or temperature and humidity sensors.

Control

- 1x USB 3.0 (Type A) port

  Allows for USB playback and firmware upgrade over USB.

- 1x USB (Type B) port

  Connects to the control computer for content publishing and screen control.

- 1x Gigabit Ethernet port

  Connects 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 H.264/H.265 4K@60Hz video decoding
  - 1 GB of onboard RAM
  - 16 GB of internal storage
- Flawless playback

  2x 4K, 6x 1080p, 10x 720p, or 20x 360p video playback

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.
- Switching between Wi-Fi AP and Wi-Fi STA
  - In Wi-Fi AP mode, the user terminal connects to the built-in Wi-Fi hotspot of the TB50. The default SSID is “AP+*Last 8 digits of SN*” and the default password is “12345678”.
  - In Wi-Fi STA mode, the user terminal and the TB50 are connected to the Wi-Fi hotspot of a router.
- Synchronous and asynchronous modes
  - In asynchronous mode, the internal video source works.
  - In synchronous mode, the video source input from the HDMI connector works.
- Synchronous playback across multiple screens
  - 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 TB50 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 types of networks are available, the TB50 will choose a signal automatically according to the priority.

Appearance

Front Panel

Name	Description
SWITCH	Switches between synchronous and asynchronous modes • Staying on: Synchronous mode

Name	Description
	• 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

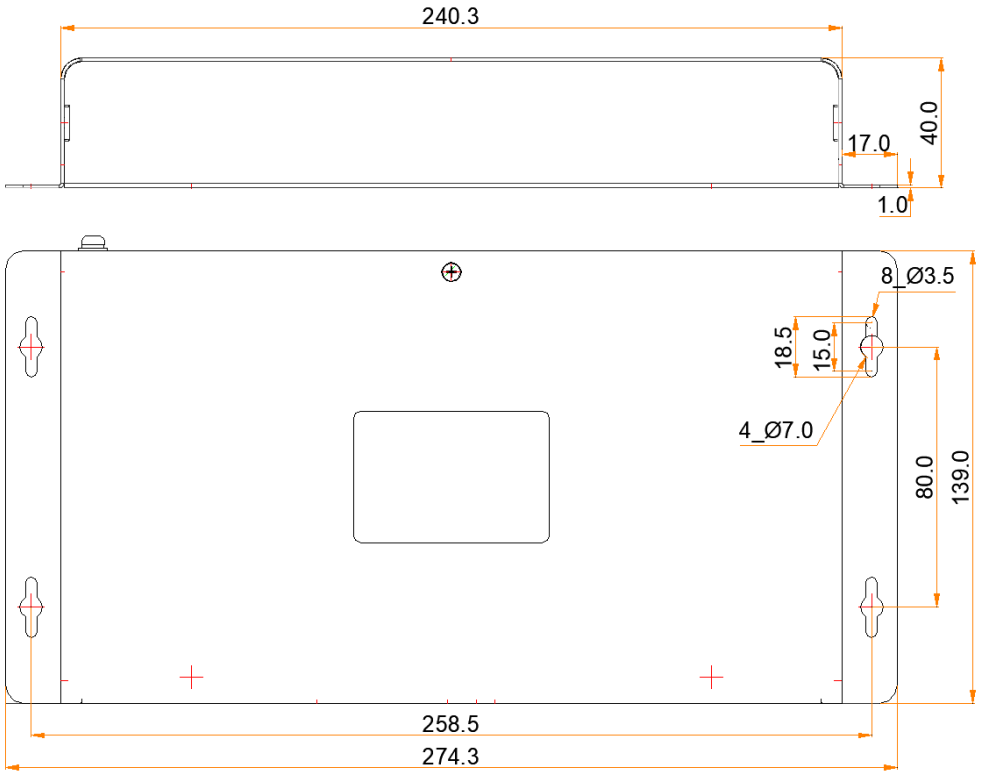
Name	Description
SENSOR	Sensor connectors Connect to brightness sensors or temperature and humidity sensors.
	RF antenna connector
HDMI	HDMI 1.4 connectors • OUT: Output connector, support for HDMI loop • IN: Input connector, HDMI video input in synchronous mode In synchronous mode, users can enable full-screen scaling to adjust the image to fit the screen automatically. Requirements for full-screen scaling in synchronous mode: • 64 pixels ≤ video source width ≤ 2048 pixels • Images can only be scaled down and cannot be scaled up.
WiFi	Wi-Fi antenna connector 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 and firmware upgrade over USB. The Ext4 and FAT32 file systems are supported. The exFAT and FAT16 file systems are not supported.
COM 1	4G antenna connector
AUDIO OUT	Audio output connector

Name	Description
100-240V~, 50/60Hz, 0.6A	Power input connector
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	Staying on	The TB50 is connected to the Internet and the connection is available.
		Flashing once every 2s	The TB50 is connected to VNNOX and the connection is available.
		Flashing once every second	The TB50 is upgrading the operating system.
		Flashing once every 0.5s	The TB50 is copying the upgrade package.
RUN	Green	Flashing once every second	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
Storage Capacity	RAM	1 GB
	Internal storage	16 GB
Operating Environment	Temperature	–20ºC to +60ºC
	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 Quick Start Guide • 1x Packing list
IP Rating	IP20 Please prevent the product from water intrusion and do not wet or wash the product.	
System Software	• Android 11.0 operating system software • Android terminal application software • FPGA program Note: Third-party applications are not supported.	

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

Media Decoding Specifications

Image

Category	Codec	Supported Image Size	Container	Remarks
JPEG	JFIF file format 1.02	96×32 pixels to 817×8176 pixels	JPG, JPEG	No support for non-interlaced scan Support for SRGB JPEG Support for Adobe RGB JPEG
BMP	BMP	No Restriction	BMP	N/A
GIF	GIF	No Restriction	GIF	N/A
PNG	PNG	No Restriction	PNG	N/A
WEBP	WEBP	No Restriction	WEBP	N/A

Video

Category	Codec	Resolution	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
MPEG-1/2	MPEG-1/2	48×48 pixels to 1920×1088 pixels	30fps	80Mbps	DAT, MPG, VOB, TS	Support for field coding
MPEG-4	MPEG4	48×48 pixels to 1920×1088 pixels	30fps	38.4Mbps	AVI, MKV, MP4, MOV, 3GP	No support for MS MPEG4 v1/v2/v3, GMC
H.264/AVC	H.264	48×48 pixels to 4096×2304 pixels	2304p@60fps	80Mbps	AVI, MKV, MP4, MOV, 3GP, TS, FLV	Support for field coding and MBAFF
MVC	H.264 MVC	48×48 pixels to 4096×2304 pixels	2304P@60fps	100Mbps	MKV, TS	Support for Stereo High Profile only
H.265/HEVC	H.265/ HEVC	64×64 pixels to 4096×2304 pixels	2304P@60fps	100Mbps	MKV, MP4, MOV, TS	Support for Main Profile, Tile & Slice
GOOGLE	VP8	48×48 pixels to	30fps	38.4Mbps	WEBM,	N/A

Category	Codec	Resolution	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
VP8		1920×1088 pixels			MKV	
GOOGLE VP9	VP9	64×64 pixels to 4096×2304 pixels	60fps	80Mbps	WEBM, MKV	N/A
H.263	H.263	SQCIF (128×96) QCIF (176×144) CIF (352×288) 4CIF (704×576)	30fps	38.4Mbps	3GP, MOV, MP4	No support for H.263+
VC-1	VC-1	48×48 pixels to 1920×1088 pixels	30fps	45Mbps	WMV, ASF, TS, MKV, AVI	N/A
MOTION JPEG	MJPEG	48×48 pixels to 1920×1088 pixels	60fps	60Mbps	AVI	N/A

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.

Others

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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