



Change History

Document Version	Release Date	Description
V1.0.4	2022-06-10	<ul style="list-style-type: none">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	<ul style="list-style-type: none">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	<ul style="list-style-type: none">Added certification information.Updated the description of the playback performance.Updated net weight.
V1.0.0	2021-07-30	First release

Introduction

The TB60 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 TB60 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 TB60 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, CCC, 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 2,300,000 pixels
 - Maximum width: 4096 pixels
 - Maximum height: 4096 pixels
- 4x Gigabit Ethernet ports
 - All these four ports serve as primary by default. Users can also set two as primary and the other two 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

Function

- 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 TB60. 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 TB60 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 TB60 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 TB60 will choose a signal automatically according to the priority.

Appearance

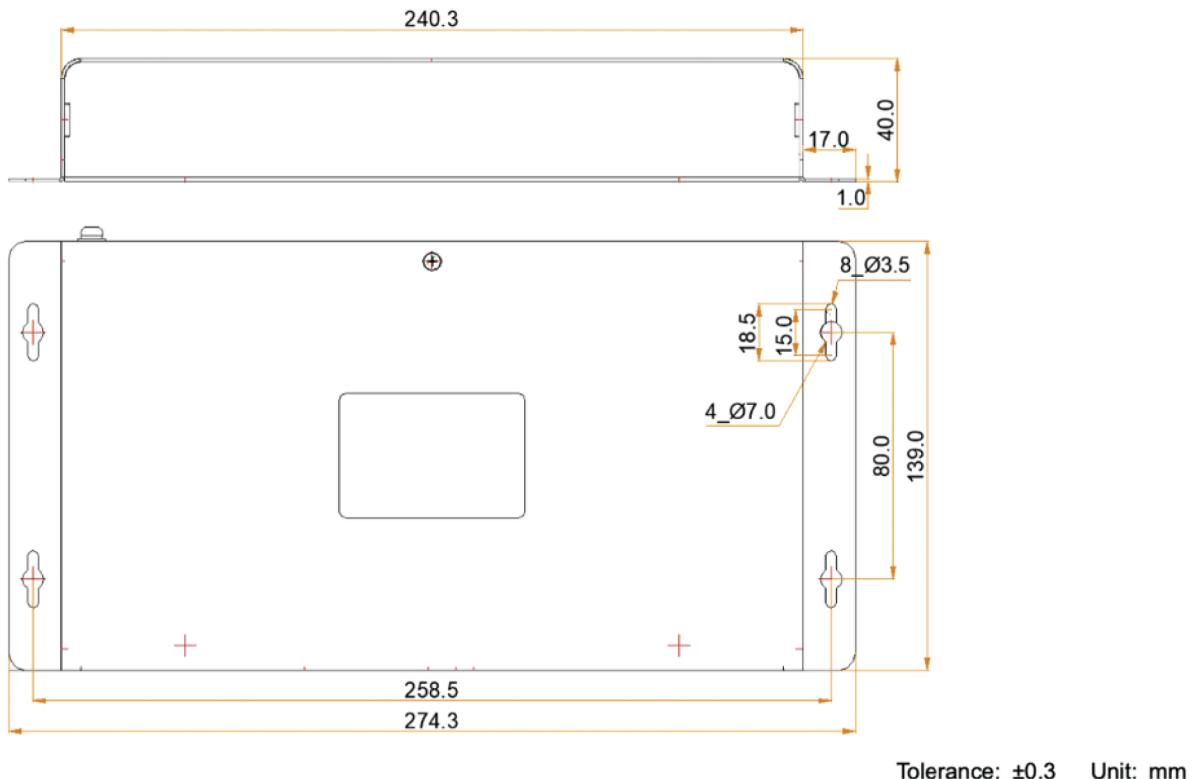
Front Panel



Name	Description
SWITCH	Switches between synchronous and asynchronous modes <ul style="list-style-type: none">• Staying on: Synchronous mode• Off: Asynchronous mode
SIM CARD	SIM card slot <ul style="list-style-type: none">Capable of preventing users from inserting a SIM card in the wrong orientation
RESET	Factory reset button

Name	Color	Status	Description
SYS	Green	Flashing once every 2s	The TB60 is functioning normally.
		Staying on/off	The TB60 is abnormal.
CLOUD	Green	Staying on	The TB60 is connected to the Internet and the connection is available.
		Flashing once every 2s	The TB60 is connected to VNNOX and the connection is available.
		Flashing once every second	The TB60 is upgrading the operating system.
		Flashing once every 0.5s	The TB60 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



Specifications

Electrical Parameters	Input power	100-240V~, 50/60Hz, 0.6A
	Maximum power consumption	18 W

Video

Category	Codec	Resolution	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
MPEG-1/2	MPEG-1/2	48x48 pixels to 1920x1088 pixels	30fps	80Mbps	DAT, MPG, VOB, TS	Support for field coding
MPEG-4	MPEG4	48x48 pixels to 1920x1088 pixels	30fps	38.4Mbps	AVI, MKV, MP4, MOV, 3GP	No support for MS MPEG4 v1/v2/v3, GMC
H.264/AVC	H.264	48x48 pixels to 4096x2304 pixels	2304p@60fps	80Mbps	AVI, MKV, MP4, MOV, 3GP, TS, FLV	Support for field coding and MBAFF
MVC	H.264 MVC	48x48 pixels to 4096x2304 pixels	2304p@60fps	100Mbps	MKV, TS	Support for Stereo High Profile only
H.265/HEVC	H.265/HEVC	64x64 pixels to 4096x2304 pixels	2304p@60fps	100Mbps	MKV, MP4, MOV, TS	Support for Main Profile, Tile & Slice
GOOGLE VP8	VP8	48x48 pixels to 1920x1088 pixels	30fps	38.4Mbps	WEBM, MKV	N/A
GOOGLE VP9	VP9	64x64 pixels to 4096x2304 pixels	60fps	80Mbps	WEBM, MKV	N/A
H.263	H.263	SQCIF (128x96) QCIF (176x144) CIF (352x288) 4CIF (704x576)	30fps	38.4Mbps	3GP, MOV, MP4	No support for H.263+
VC-1	VC-1	48x48 pixels to 1920x1088 pixels	30fps	45Mbps	WMV, ASF, TS, MKV, AVI	N/A
MOTION JPEG	MJPEG	48x48 pixels to 1920x1088 pixels	60fps	60Mbps	AVI	N/A

Notes and CautionsFCC 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