

# Taurus Series Multimedia Player



T50 Specifications

## Change History

| Document Version | Release Date | Description  |
|------------------|--------------|--|
| V1.0.1           | 2021-9-30    | <ul style="list-style-type: none"> <li>• Added certification information.</li> <li>• Updated the description of the playback performance.</li> <li>• Updated the product pictures.</li> <li>• Added net weight.</li> </ul> |
| V1.0.0           | 2021-08-10   | First release  |

## Introduction

The T50 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 T50 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 T50 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

CE, RoHS, FCC, IC, FCC ID, IC ID, UKCA

**Note: 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 and 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 playback of content imported from a USB drive and firmware upgrade over USB.
- 1x USB (Type B) port  
Reserved
- 1x Gigabit Ethernet port  
Connects to a LAN, public network, or computer 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 T50. The default SSID is "AP+*Last 8 digits of SN*" and the default password is "12345678".

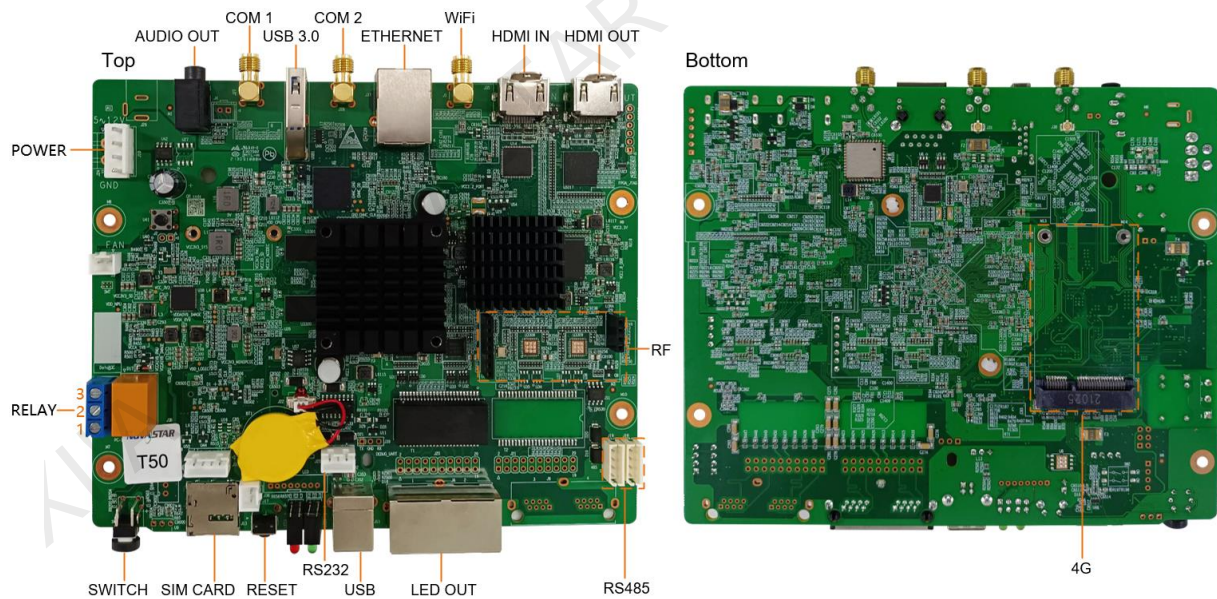
- In Wi-Fi STA mode, the user terminal and the T50 are connected to the Wi-Fi hotspot of a router.
- Synchronous and asynchronous modes
  - In asynchronous mode, the internal video source works.
  - In synchronous mode, the video source input from the HDMI connector works.
- Synchronous playback across 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 T50 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 T50 will choose a signal automatically according to the priority.

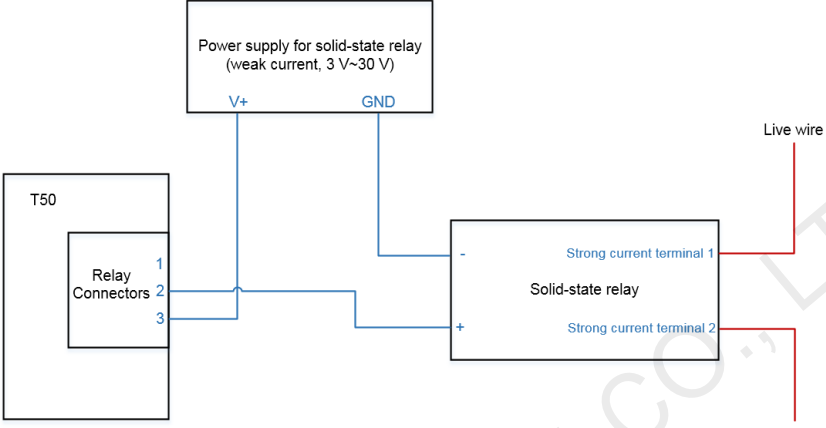
### Appearance



All product pictures shown in this document are for illustration purpose only. Actual product may vary.

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

| Name      | Description   |
|-----------|---|
| RESET     | Factory reset button<br>Press and hold this button for 5 seconds to reset the product to its factory settings.  |
| RS232     | External expansion connector  |
| USB       | Reserved USB (Type B) port  |
| LED OUT   | Gigabit Ethernet outputs  |
| RS485     | Sensor connectors<br>Connect to light sensors or temperature and humidity sensors.  |
| RF        | RF module connector   |
| HDMI OUT  | HDMI 1.4 output connector, support for HDMI loop  |
| HDMI IN   | HDMI 1.4 input connector, HDMI video input in synchronous mode<br>In synchronous mode, users can enable full-screen scaling to adjust the image to fit the screen automatically.<br>Requirements for full-screen scaling in synchronous mode: <ul style="list-style-type: none"> <li>• 64 pixels ≤ video source width ≤ 2048 pixels</li> <li>• Images can only be scaled down and cannot be scaled up.</li> </ul>   |
| WiFi      | Wi-Fi antenna connector<br>Support for switching between Wi-Fi AP and Wi-Fi Sta   |
| ETHERNET  | Gigabit Ethernet port<br>Capable of connecting to a LAN, public network, or computer for content publishing and screen control<br>Indicator status description: <ul style="list-style-type: none"> <li>• The yellow stays on: The T50 is connected to a fast Ethernet cable and the connection is available.</li> <li>• The green and yellow stay on simultaneously: The T50 is connected to a Gigabit Ethernet cable and the connection is available.</li> </ul> |
| COM 2     | GPS antenna connector   |
| USB 3.0   | USB 3.0 (Type A) port<br>Allowing for playback of content imported from a USB drive and firmware upgrade over USB<br>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  |
| POWER     | Power input connector   |
| RELAY     | 3-pin relay control switch <ul style="list-style-type: none"> <li>• DC: Maximum voltage and current: 30 V, 3 A</li> <li>• AC: Maximum voltage and current: 250 V, 3 A</li> </ul> Two connection methods: <ul style="list-style-type: none"> <li>• Common switch: The connection method of pins 2 and 3 is not fixed. Pin 1 is not connected to the wire. On the power control page of ViPlex Express, turn on the circuit to connect pin</li> </ul>               |

| Name | Description  |
|------|--|
|      | <p>2 to pin 3, and turn off the circuit to disconnect pin 2 from pin 3.</p> <ul style="list-style-type: none"> <li>Single pole double throw switch: The connection method is fixed. Connect pin 2 to the pole. Connect pin 1 to the turn-off wire and pin 3 to turn-on wire. On the power control page of ViPlex Express, turn on the circuit to connect pin 2 to pin 3 and disconnect pin 1 from pin 2, or turn off the circuit to disconnect pin 3 from pin 2 and connect pin 2 to pin 1.</li> </ul> <p>Note: The T50 uses DC power supply. Using the relay to directly control AC is not recommended. If it is required to control AC, the following connection method is recommended.</p>  |
| 4G   | 4G module slot   |

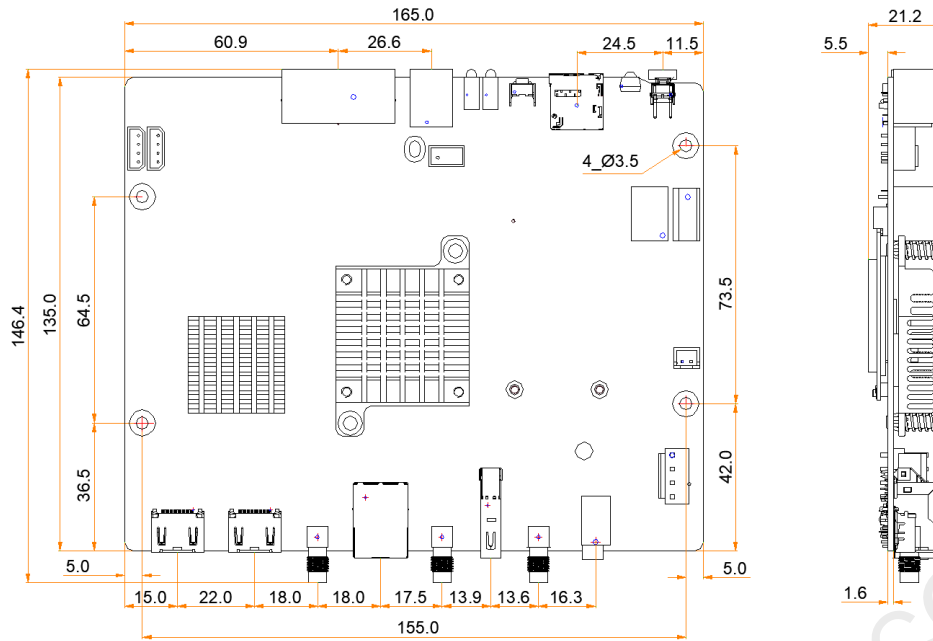
## Indicators



| Name  | Color | Status                     | Description   |
|-------|-------|----------------------------|---|
| PWR   | Red   | Staying on                 | The power supply is working properly.   |
| SYS   | Green | Flashing once every 2s     | The T50 is functioning normally.  |
|       |       | Flashing once every second | The T50 is installing the upgrade package.                                    |
|       |       | Flashing once every 0.5s   | The T50 is downloading data from the Internet or copying the upgrade package. |
|       |       | Staying on/off             | The T50 is abnormal.  |
| CLOUD | Green | Staying on                 | The T50 is connected to the Internet and the connection is available.         |
|       |       | Flashing once every 2s     | The T50 is connected to VNNOX and the connection is available.                |
| RUN   | Green | Flashing once every second | No video signal   |
|       |       | Flashing once every 0.5s   | The T50 is functioning normally.  |
|       |       | Staying on/off             | FPGA loading is abnormal.   |



## Dimensions



Tolerance:  $\pm 0.3$  Unit: mm

## Specifications

|                       |  |  |
|-----------------------|--|--|
| Electrical Parameters | Input voltage  | DC 5 V~12 V  |
|                       | Maximum power consumption  | 18 W   |
| Storage Capacity      | RAM  | 1 GB   |
|                       | Internal storage   | 16 GB  |
| Storage Environment   | Temperature  | -40°C to +80°C   |
|                       | Humidity   | 0% RH to 80% RH, non-condensing  |
| Operating Environment | Temperature  | -20°C to +60°C   |
|                       | Humidity   | 0% RH to 80% RH, non-condensing  |
| Packing Information   | Dimensions (LxWxH)   | 278.0 mm x 63.0 mm x 221.0 mm  |
|                       | List   | <ul style="list-style-type: none"> <li>• 1x T50</li> <li>• 1x Wi-Fi omnidirectional antenna</li> <li>• 1x Power connector</li> <li>• 2x IPex cables</li> <li>• 1x Quick Start Guide</li> </ul> |
| Dimensions (LxWxH)    | 165.0 mm x 146.4 mm x 21.2 mm  |  |
| Net Weight            | 184.5 g  |  |
| System Software       | <ul style="list-style-type: none"> <li>• Android 11.0 operating system software</li> <li>• Android terminal application software</li> <li>• FPGA program</li> </ul> <p>Note: Third-party applications are not supported.</p> |  |

## Media Decoding Specifications

### Image

| Category | Codec                 | Supported Image Size            | Container | Remarks   |
|----------|-----------------------|---------------------------------|-----------|---|
| JPEG     | JFIF file format 1.02 | 96x32 pixels to 817x8176 pixels | JPG, JPEG | No support for non-interlaced scan<br>Support for SRGB JPEG<br>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   | 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)<br>QCIF (176x144)<br>CIF (352x288)<br>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                                    |

## 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.

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

## Integration Instructions for Host Product Manufacturers According to KDB 996369 D03 OEM Manual v01

- List of applicable FCC rules  
FCC Part 15 Subpart C 15.247 & 15.209
- Specific operational use conditions  
The module is a 2.4G WiFi module.  
Operation Frequency: 2412-2462MHz



Number of Channel: 11

Modulation: DSSS, OFDM

Type: Helix Antenna

Gain: 5.03 dBi Max.

The module can be used for mobile or portable applications with a maximum 5.03dBi antenna. The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

- Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

- Trace antenna designs

Not applicable. The module has its own antenna, and doesn't need a host's printed board micro strip trace antenna etc.

- RF exposure considerations

The module must be installed in the host equipment such that at least 20cm is maintained between the antenna and users' body; and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

- Antennas

Antenna Specification are as follows:

Type: Helix Antenna

Gain: 5.03 dBi

This device is intended only for host manufacturers under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna; the module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

- Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID: 2AG8JT60" with their finished product.

- Information on test modes and additional testing requirements

Operation Frequency: 2412-2462MHz

Number of Channel: 11

Modulation: DSSS, OFDM

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc. according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product. Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally. 2.10 Additional testing, Part 15 Subpart B disclaimer. The modular transmitter is only FCC authorized for FCC Part 15 Subpart C 15.247 & 15.209 and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

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