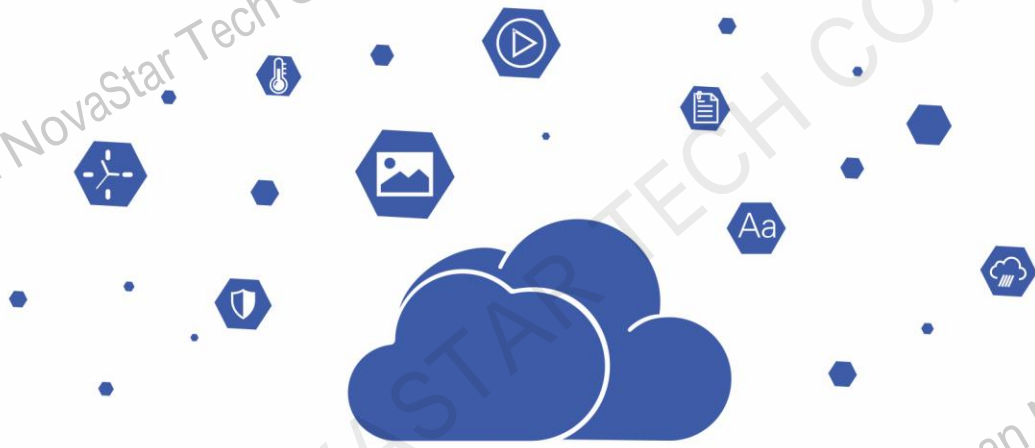




Taurus Series Multimedia Players

V1.4.1 NS120100612



TB2-4G & TB2-4G (Optional 4G) Specifications

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1 Overview

1.1 Introduction

Taurus series products are NovaStar's second generation of multimedia players dedicated to small and medium-sized full-color LED displays.

The TB2-4G is provided with a 4G module. The TB2-4G (Optional 4G) is provided without a 4G module by default and users can buy a 4G module if needed.

Features

- Powerful processing capability
- Comprehensive control plans
- Synchronous and asynchronous dual-mode
- Wi-Fi AP connection
- 4G module
- Capable of connecting to PC through USB

In addition to solution publishing and screen control via PC, mobile phones and LAN, the comprehensive control plans also support remote centralized publishing and monitoring.

Other Hardware Features

- Loading capacity up to 650,000 pixels, with the maximum width of 1920 pixels and maximum height of 1080 pixels
- Wired Fast Ethernet
- Stereo audio output
- HDMI input and auto full-screen display
- USB drive importing display

1.2 Application

Taurus series products can be widely used in LED commercial display field, such as bar screen, chain store screen, advertising machine, mirror screen, retail store screen, door head screen, on board screen and the screen requiring no PC.

Classification of Taurus' application cases is shown in [Table 1-1](#).

Table 1-1 Application

Classification	Description
Market type	<ul style="list-style-type: none">• Advertising media: To be used for advertising and information promotion including bar screen and advertising machine.• Digital signage: To be used for signage display in retail stores including retail store screens and door head screens.• Commercial display: To display commercial information of hotel, cinema and shopping mall, such as chain store screens.
Networking mode	<ul style="list-style-type: none">• Independent screen: Use a PC or the client software of a mobile phone to enable single-point connection and management of a screen.• Cluster screen: Use the cluster solution developed by NovaStar to realize centralized management and monitor of multiple screens.
Connection type	<ul style="list-style-type: none">• Wired connection: A PC connects to Taurus through the Ethernet cable or LAN.• Wi-Fi connection: PC, Pad and mobile phone can connect to Taurus through Wi-Fi, which can be enabled in the case without PC in conjunction with ViPlex software.

2 Features

2.1 Powerful Processing Capability

- 1.2 GHz four-core processor
- Support for 1080P video hardware decoding
- 1 GB operating memory
- 8 GB on-board internal storage space with 4 GB available for users

2.2 Comprehensive Control Plans

Table 2-1 Control Plan

Control Plan	Connecting Mode	User Terminal	Related Software
Solution publishing and screen control through PC	Ethernet cable Wi-Fi	PC	ViPlex Express NovaLCT
Solution publishing and screen control through LAN	LAN	PC	ViPlex Express NovaLCT
Solution publishing and screen control through mobile phone	Wi-Fi	Mobile phone and Pad	ViPlex Handy
Cluster remote solution publishing and screen control	Ethernet cable Wi-Fi 4G	Mobile phone, Pad and PC	VNNOX ViPlex Handy ViPlex Express
Cluster remote monitoring	Ethernet cable Wi-Fi 4G	Mobile phone, Pad and PC	NovaiCare ViPlex Handy ViPlex Express

Cluster control plan is a new internet control plan featuring following advantages:

- More efficient: Use the cloud service mode to process services through a uniform platform. For example, VNNOX is used to edit and publish solutions, and NovaiCare is used to centrally monitor display status.
- More reliable: Ensure the reliability based on active and standby disaster recovery mechanism and data backup mechanism of the server.
- More safe: Ensure the system safety through channel encryption, data fingerprint and permission management.
- Easier to use: VNNOX and NovaiCare can be accessed through Web. As long as there is internet, operation can be performed anytime and anywhere.
- More effective: This mode is more suitable for the commercial mode of advertising industry and digital signage industry, and makes information spreading more effective.

2.3 Synchronous and Asynchronous Dual-Mode

The TB2-4G and TB2-4G (Optional 4G) support synchronous and asynchronous dual-mode, allowing more application cases and being user-friendly.

When internal video source is applied, the TB2-4G and TB2-4G (Optional 4G) are in asynchronous mode; when HDMI-input video source is used, the TB2-4G and TB2-4G (Optional 4G) are in synchronous mode. Content can be scaled and displayed to fit the screen size automatically in synchronous mode.

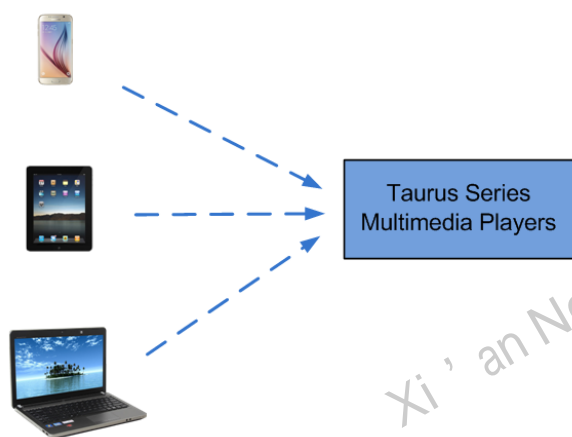
Requirements of full screen zoom:

- $64 \text{ pixels} \leq \text{Video source width} \leq 2048 \text{ pixels}$
- $64 \text{ pixels} \leq \text{Screen width} \leq \text{Original width of video source}$

Users can manually and timely switch between synchronous and asynchronous modes, as well as set HDMI priority.

2.4 Wi-Fi AP Connection

The TB2-4G and TB2-4G (Optional 4G) have permanent Wi-Fi AP. The SSID is "**AP + the last 8 digits of the SN**", for example, "**AP10000033**", and the default password is "**12345678**". The TB2-4G and TB2-4G (Optional 4G) require no wiring and users can manage the displays at any time by connecting to the TB2-4G and TB2-4G (Optional 4G) via mobile phone, Pad or PC.



Wi-Fi AP signal strength is related to the transmit distance and environment. Users can change the Wi-Fi antenna as required.

2.5 4G Module

The TB2-4G and TB2-4G (Optional 4G) are designed with 4G module. You can connect to the Internet via 4G network after turning on mobile data network in the client software ViPlex.

Wired network is prior to 4G network. When both of the networks are available, the TB2-4G and TB2-4G (Optional 4G) will choose signals automatically according to the priority.

2.6 Connecting to PC Through USB

The TB2-4G and TB2-4G (Optional 4G) offer one USB Type B port allowing PC to be directly connected without requiring other operations and you can configure screens, publish solutions, etc. by using NovaLCT and ViPlex Express on Windows.

3 Hardware Structure

3.1 Appearance

3.1.1 Front Panel

Figure 3-1 Front panel



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

Table 3-1 Front panel description

Name	Description
SWITCH	Button for switching between synchronous and asynchronous modes <ul style="list-style-type: none">• Always on: Synchronous mode• Off: Asynchronous mode
SIM CARD	SIM card slot

Name	Description
PWR	Power status indicator Always on: Power input is normal.
SYS	System status indicator <ul style="list-style-type: none"> • Flashing once every other 2 seconds: The system is operating normally. • Flashing once every other second: The system is installing the upgrade package. • Flashing once every other 0.5 second: The system is downloading data from the Internet or copying the upgrade package. • Always on/off: The system is operating abnormally.
CLOUD	Internet connection status indicator <ul style="list-style-type: none"> • Always on: The unit is connected to the Internet and the connection status is normal. • Flashing once every other 2 seconds: The unit is connected to VVNOX and the connection status is normal.
RUN	FPGA status indicator Same as the signal indicator status of the sending card: FPGA is operating normally.
HDMI IN	HDMI 1.3 input
USB 1	USB 2.0 port
ETHERNET	Fast Ethernet port
WiFi-AP	Wi-Fi AP antenna port
4G	4G antenna port

3.1.2 Rear Panel

Figure 3-2 Rear panel

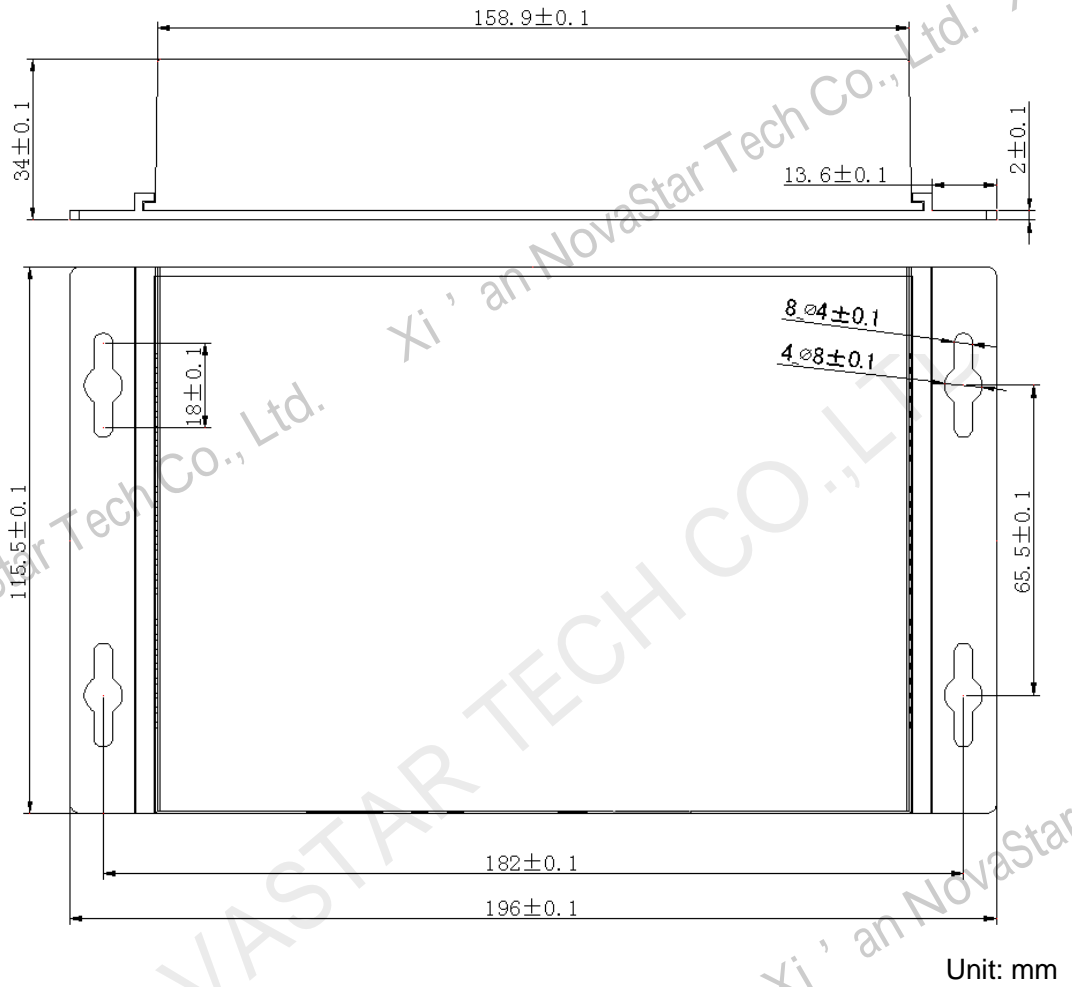


Note: All product pictures shown in this document are for illustration purpose only. Actual product may vary.

Table 3-2 Rear panel description

Name	Description
PWR	Power input
AUDIO	Audio output
USB 2	USB Type B port
RESET	Factory reset button, hold down for 5 seconds to reset to factory defaults
LEDOUT	Output Ethernet port

3.2 Dimensions



4 Software Structure

4.1 System Software

- Android operating system software
- Android terminal application software
- FPGA program

Note: The third-party applications are not supported.

4.2 Configuration Software

Table 4-1 Related configuration software

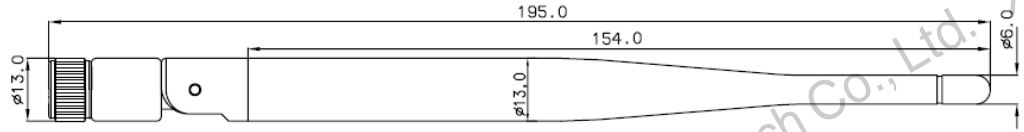
Name	Type	Description
ViPlex Handy	Mobile client	LAN-based screen management software for Android and iOS, which is mainly used for screen management, solution editing and publishing.
ViPlex Express	PC client	LAN-based screen management software for Windows, which is mainly used for screen management, solution editing and publishing.
NovaLCT	PC client	Screen configuration software for Windows and OS X, mainly used to adjust the screen to the optimal display condition.

5 Product Specifications

Specifications

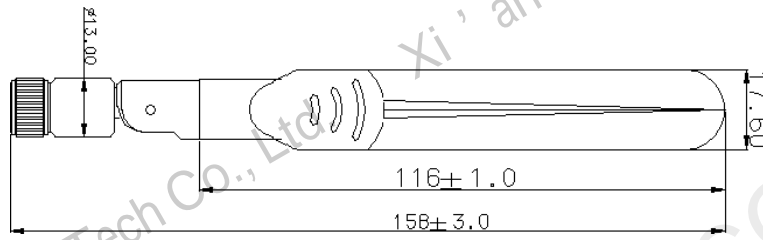
Electrical Parameters	Input voltage	5 V DC
	Maximum power consumption	15 W
Storage Space	Operating memory	1 GB
	Internal storage space	8 GB on-board with 4 GB available for users
Storage Environment	Temperature	0°C–50°C
	Humidity	0% RH–80% RH, non-condensing
Operating Environment	Temperature	-20°C–60°C
	Humidity	0% RH–80% RH, non-condensing
Packing Information	Dimensions (H×W×D)	335 mm × 190 mm × 62 mm
	TB2-4G	<ul style="list-style-type: none"> • 1 × TB2-4G • 1 × Wi-Fi omnidirectional antenna • 1 × 4G omnidirectional antenna • 1 × Power adapter (5V 3A) • 1 × Quick Start Guide
	TB2-4G (Optional 4G)	<ul style="list-style-type: none"> • 1 × TB2-4G (Optional 4G) • 1 × Wi-Fi omnidirectional antenna • 1 × Power adapter (5V 3A) • 1 × Quick Start Guide
Dimensions (H × W × D)	196.0 mm × 115.5 mm × 34.0 mm	
Net Weight	TB2-4G: 315.3 g TB2-4G (Optional 4G): 304.5 g	
IP Rating	IP20 Please prevent the product from water intrusion and do not wet or wash the product	

Wi-Fi Antenna



Unit: mm

4G Antenna



Unit: mm

6 Audio and Video Decoder Specifications

6.1 Image

6.1.1 Decoder

Type	Codec	Supported Image Size	Container	Remarks
JPEG	JFIF file format 1.02	48x48 pixels~8176x8176 pixels	JPG, JPEG	Not Support Non-interleaved Scan Software support SRGB JPEG Software support 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

6.1.2 Encoder

Type	Codec	Supported Image Size	Maximum Data Rate	File Format	Remarks
JPEG	JPEG Baseline	96x32 pixels~8176x8176 pixels	90Mpixels/Second	JFIF file format 1.02	N/A

6.2 Audio

6.2.1 Decoder

Type	Codec	Channel	Bit rate	Sampling rate	File Format	Remarks
MPEG	MPEG1/2/2.5 Audio Layer1/2/3	2	8kbps~320Kbps, CBR and VBR	8KHZ~48 KHz	MP1, MP2, MP3	N/A
Windows Media Audio	WMA Version 4, 4.1, 7, 8, 9, wmapro	2	8kbps~320Kbps	8KHZ~48 KHz	WMA	Non-support WMA Pro, lossless and MBR
WAV	MS-ADPCM, IMA-ADPCM, PCM	2	N/A	8KHZ~48 KHz	WAV	Support 4bit MS-ADPCM, IMA-ADPCM
OGG	Q1~Q10	2	N/A	8KHZ~48 KHz	OGG, OGA	N/A
FLAC	Compress Level 0~8	2	N/A	8KHZ~48 KHz	FLAC	N/A
AAC	ADIF, ATDS Header AAC-LC and AAC-HE, AAC-ELD	5.1	N/A	8KHZ~48 KHz	AAC, M4A	N/A
AMR	AMR-NB, AMR-WB	1	AMR-NB 4.75~12.2kbps @8kHz AMR-WB 6.60~23.85kbps @16kHz	8KHZ, 16KHz	3GP	N/A
MIDI	MIDI Type 0 and 1, DLS version 1 and 2, XMF and Mobile XMF, RTTTTL/RTX, OTA, iMelody	2	N/A	N/A	XMF, MXMF, RTTTTL, RTX, OTA, IMY	N/A

6.2.2 Encoder

Type	Codec	Channel	Bit rate	Sampling rate	Container	Remarks
AMR	AMR-NB, AMR-WB	2	4.75kbps~12.2Kbps, CBR	8KHZ, 16KHZ	3GPP	N/A
AAC	AAC-ADTS-LC	1	4.75kbps~60Kbps, CBR	8KHZ~44.1KH Z	AAC, 3GPP, Mpeg2TS	N/A

6.3 Video

6.3.1 Decoder

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
MPEG-1/2	MPEG-1/2	48x48 pixels~1920x1088 pixels	30fps	80Mbps	DAT, MPG, VOB, TS	Support Field Coding
MPEG-4	MPEG-4	48x48 pixels~1920x1088 pixels	30fps	38.4Mbps	AVI, MKV, MP4, MOV, 3GP	Not support MS MPEG4 v1/v2/v3 Not support GMC
H.264/AVC	H.264	T3&T6&TB3&TB4&TB6&TB8: 48x48 pixels~4096x2304 pixels Other models: 48x48 pixels~1920x1088 pixels	T3&T6&TB3&TB4&TB6&TB8: 4K@25fps, 1080P@60fps Other models: 1080P@60fps	T3&T6&TB3&TB4&TB6&TB8: 100Mbps Other models: 57.2Mbps	AVI, MKV, MP4, MOV, 3GP, TS, FLV	Support Field Coding Support MBAFF
MVC	H.264 MVC	48x48 pixels~1920x1088 pixels	60fps	38.4Mbps	MKV, TS	Support Stereo High Profile only
H.265/HEVC	H.265/HEVC	T3&T6&TB3&TB4&TB6&TB8: 64x64 pixels~4096x2304 pixels Other models: 64x64 pixels~1920x1088 pixels	T3&T6&TB3&TB4&TB6&TB8: 4K@60fps, 1080P@60fps Other models: 1080P@60fps	T3&T6&TB3&TB4&TB6&TB8: 100Mbps Other models: 57.2Mbps	MKV, MP4, MOV, TS	Support Main Profile Support Tile & Slice
GOOGLE VP8	VP8	48x48 pixels~1920x1088 pixels	30fps	38.4 Mbps	WEBM, MKV	N/A
H.263	H.263	SQCIF(128x96), QCIF(176x144), CIF(352x288), 4CIF(704x576)	30fps	38.4Mbps	3GP, MOV, MP4	Not support H.263+
VC-1	VC-1	48x48 pixels~1920x1088 pixels	30fps	45Mbps	WMV, ASF, TS, MKV, AVI	N/A

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
MOTION JPEG	MJPEG	48x48 pixels~1920x1088 pixels	30fps	38.4Mbps	AVI	N/A

Note: Output data format is YUV420 semi-planar, and YUV400(monochrome) is also supported for H.264.

6.3.2 Encoder

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
H.264/AVC	H.264	144x96 pixels~1920x1088 pixels	30fps	20Mbps	MOV, 3GP	Not support MBAFF
Google VP8	VP8	96x96 pixels~1920x1088 pixels	30fps	10Mbps	WEBM	N/A

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