Taurus Series

Multimedia Players

TB1-4G Specifications

Product Version: V1.0.0

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1 Safety

This chapter illustrates Taurus series products safety to ensure storage, transportation, installation and usage safety of the products.

Safety description is applicable to all personnel that contact or use the products. First, pay attention to following points:

- Read throughout the description.
- Save the whole description.
- Be complied with the whole description.

1.1 Storage and Transport Safety

- Pay attention to dust and water prevention.
- Avoid long-term direct sunlight.
- Do not place the products in the position near fire and heat.
- Do not place the products in an area containing explosive materials.
- Do not place the products in strong electromagnetic environment.
- Place the products in a stable position to prevent damage or personal injury caused by dropping.
- Save the packing box and materials which will come in handy if you ever have to ship your products. For maximum protection, repack your product as it was originally packed at the factory.

1.2 Installation and Use Safety

- Only trained professionals may install the products.
- Do not insert and unplug (power cord plug) when the power is on.
- Devices must be placed horizontally during installation and use.
- Ensure the safe grounding of the device.
- Be careful about electric shock risk.
- Always wear a wrist band and insulating gloves.
- Do not place the products in an area having more or strong shake.
- Perform dust removing regularly.

- Rather than having the product disassembled and maintained by non-certified professionals, please contact NovaStar for maintenance at any time.
- Replace spare parts only with the same parts supplied by NovaStar.

2 **Overview**

2.1 Introduction

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

Features

The TB1-4G of the Taurus series products (hereinafter referred to as "TB1-4G") has the following features:

- Powerful processing capability
- Omnidirectional control plan
- 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 omnidirectional control plan also supports remote centralized publishing and monitoring.

Other Hardware Features

The hardware of the TB1-4G also has the following features:

- Loading capacity up to 650,000 pixels, with the maximum width of 1920 pixels and maximum height of 1080 pixels
- Wired Gigabit Ethernet
- Stereo audio output
- USB drive importing display
- Onboard light sensor connector allowing for automatic and scheduled brightness adjustment

2.2 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 2-1.

Table 2-1 Application

Classification	Description
Market type	• 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	• 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	• Wired connection: A PC connects to Taurus through the Ethernet cable or LAN. • Wi-Fi connection: PC, Pad and mobile phone can connect to Taunus through Wi-Fi, which can be enabled in the case without PC in conjunction with ViPlex software.

3 Features

3.1 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

3.2 Omnidirectional Control Plan

Table 3-1 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.

3.3 Wi-Fi AP Connection

The TB1-4G has 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 TB1-4G requires no wiring and users can manage the displays at any time by connecting to the TB1-4G via mobile phone, Pad or PC.
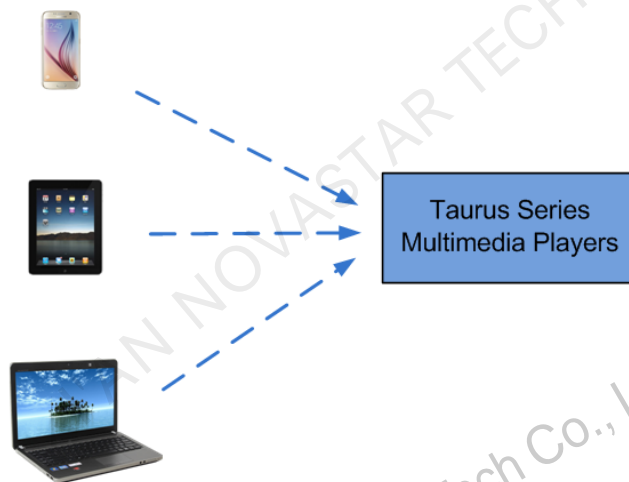
TB1-4G's Wi-Fi AP signal strength is related to the transmit distance and environment. Users can change the Wi-Fi antenna as required.

3.4 4G Module

The TB1-4G is 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 TB1-4G will choose signals automatically according to the priority.

3.5 Connecting to PC Through USB

The TB1-4G offers 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.

4 **Hardware Structure**

4.1 Appearance

4.1.1 Front Panel

Figure 4-1 Front panel of the TB1-4G

Note: Product images provided in this file are for reference only, and the actual products shall prevail.

Table 4-1 Description of TB1-4G front panel

Name	Description
SIM CARD	SIM card slot
PWR	Power status indicator Always on: Power input is normal.
SYS	System status indicator

Name	Description
	• Flashing once every 2 seconds: The system is operating normally. • Flashing once every 0.5 second: The system is downloading data from the Internet. • Always on/off: The system is operating abnormally.
CLOUD	Internet connection status indicator • Always on: The unit is connected to the Internet and the connection status is normal. • Flashing once every 2 seconds: The unit is connected to VNNOX and the connection status is normal.
RUN	FPGA status indicator Same as the signal indicator status of the sending card: FPGA is operating normally.
USB 1	USB2.0 port
ETHERNET	Gigabit Ethernet port
WiFi-AP	Wi-Fi AP antenna port
4G	4G antenna port

4.1.2 Rear Panel

Figure 4-2 Rear panel of the TB1-4G

Note: Product images provided in this file are for reference only, and the actual products shall prevail.

Table 4-2 Description of TB1-4G rear panel

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

4.2 Dimensions
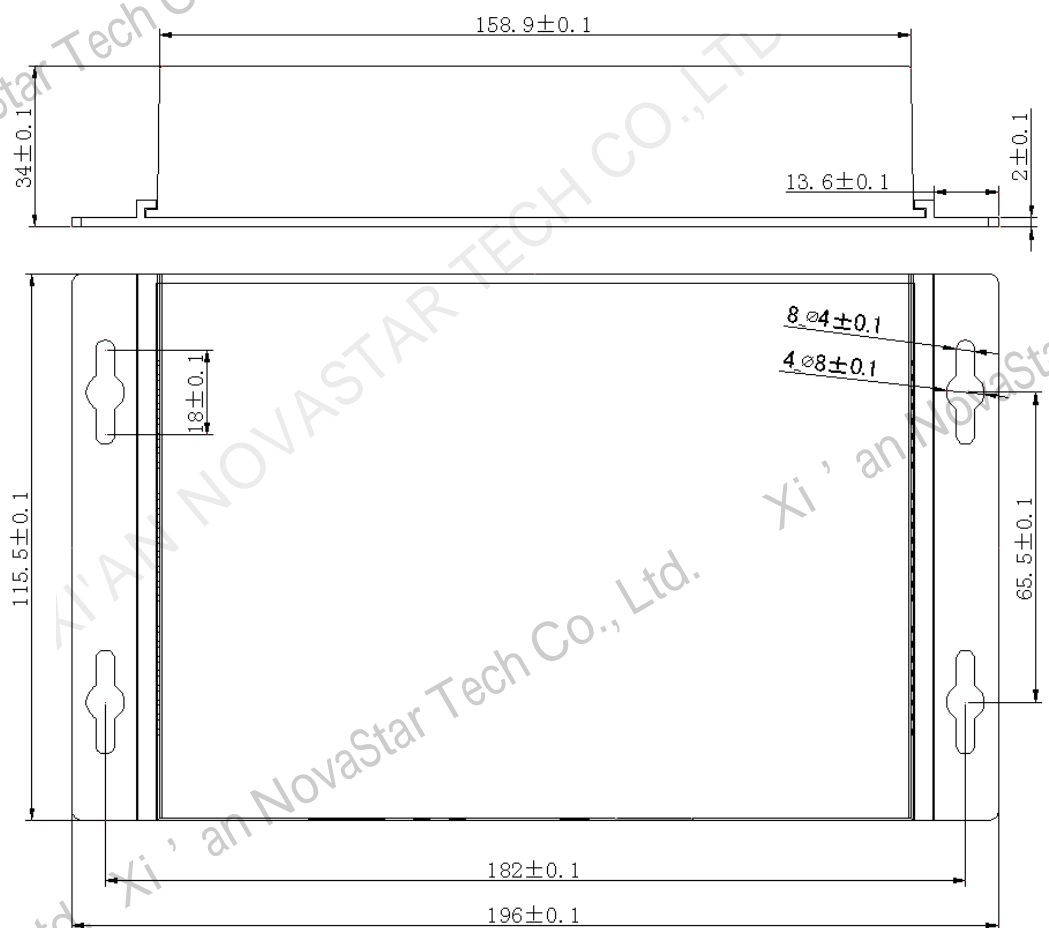
Unit: mm

5 **Software Structure**

5.1 System Software

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

Note: The third-party applications are not supported.

5.2 Related Configuration Software

Table 5-1 Related configuration software

Software	Description
ViPlex Handy	Mobile phone client software of the TB1-4G includes Android and iOS which are mainly used for screen management, editing, and solution publishing.
ViPlex Express	PC client software of the TB1-4G only includes Windows which is mainly used for screen management, editing, and solution publishing.
NovaLCT	Display screen configuration software works in Windows only, and is used to adjust screens to the best display status.

6 **Product Specifications**

Specifications

TB1-4G Item	Sub-Item	Specifications
Physical specifications	Dimension (H×W×D)	196.0 mm × 115.5 mm × 34.0 mm
	Input voltage	5 V DC
	Maximum power consumption	15 W
	Storage temperature	0ºC–50ºC
	Storage humidity	0% RH–80% RH
	Operating temperature	-40ºC–75ºC
	Operating humidity	0% RH–80% RH
	Operating memory	1 GB
	Internal storage space	8 GB on-board with 4 GB available for users
Packing information	Dimension (H×W×D)	335 mm × 190 mm × 62 mm
	List	• TB1-4G LED multimedia player x 1 • Power adapter (5V 3A) x 1 • One column Wi-Fi omnidirectional antenna

Wi-Fi Antenna
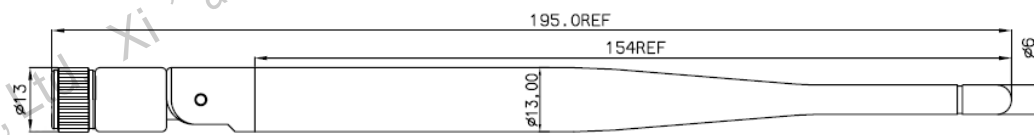
7 Audio and Video Decoder Specifications

7.1 Image

7.1.1 Decoder

Type	Codec	Supported Image Size	Container	Remarks
JPEG	JFIF file format 1.02	48×48 pixels~8176×8176 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

7.1.2 Encoder

Type	Codec	Supported Image Size	Maximum Data Rate	File Format	Remarks
JPEG	JPEG Baseline	96×32 pixels~8176×8176 pixels	90Mpixels/Second	JFIF file format 1.02	N/A

7.2 Audio

7.2.1 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, RTTTL/RTX, OTA, iMelody	2	N/A	N/A	XMF, MXMF, RTTTL, RTX, OTA, IMY	N/A

7.2.2 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~44.1KHZ	AAC, 3GPP, Mpeg2TS	N/A

7.3 Video

7.3.1 Decoder

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
MPEG-1/2	MPEG-1/2	48×48 pixels~1920×1088 pixels	30fps	80Mbps	DAT, MPG, VOB, TS	Support Field Coding
MPEG-4	MPEG4	48×48 pixels~1920×1088 pixels	30fps	38.4Mbps	AVI, MKV, MP4, MOV, 3GP	Not support MS MPEG4 v1/v2/v3 Not support GMC
H.264/AVC	H.264	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 48×48 pixels~1920×1088 pixels Other models: 48×48 pixels~4096×2304 pixels	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 1080P@60fps Other models: 4K@25fps, 1080P@60fps	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 57.2Mbps Other models: 100Mbps	AVI, MKV, MP4, MOV, 3GP, TS, FLV	Support Field Coding Support MBAFF
MVC	H.264 MVC	48×48 pixels~1920×1088 pixels	60fps	38.4Mbps	MKV, TS	Support Stereo High Profile only
H.265/HEVC	H.265/HEVC	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 64×64 pixels~1920×1088 pixels Other models: 64×64 pixels~4096×2304 pixels	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 1080P@60fps Other models: 4K@60fps, 1080P@60fps	T1&T2&TB1&TB2&T1-4G&T2-4G&TB1-4G&TB2-4G: 57.2Mbps Other models: 100Mbps	MKV, MP4, MOV, TS	Support Main Profile Support Tile & Slice
GOOGLE VP8	VP8	48×48 pixels~1920×1088 pixels	30fps	38.4 Mbps	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	Not support H.263+
VC-1	VC-1	48×48	30fps	45Mbps	WMV, ASF,	N/A

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
		pixels~1920×1088 pixels			TS, MKV, AVI	
MOTION JPEG	MJPEG	48×48 pixels~1920×1088 pixels	30fps	38.4Mbps	AVI	N/A

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

7.3.2 Encoder

Type	Codec	Supported Image Size	Maximum Frame Rate	Maximum Bit Rate (Ideal Case)	File Format	Remarks
H.264/AVC	H.264	144×96 pixels~1920×1088 pixels	30fps	20Mbps	MOV, 3GP	Not support MBAFF
Google VP8	VP8	96×96 pixels~1920×1088 pixels	30fps	10Mbps	WEBM	N/A