

# MX Series Multimedia Player



MX40 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></ul> |
| V1.0.0           | 2021-07-30   | First release                                                                                                                                 |

## Introduction

The MX40 is a new generation of multimedia player created by Maxtell 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 TB40 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 TB40 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.

## Certification

RoHS

**Note: If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact Maxtell to confirm and address the problem. Otherwise, the customer shall be responsible for the legal risks caused or Maxtell 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 Maxtell'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

## Functions

- 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 TB40. 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 TB40 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.)
- Support for 4G modules

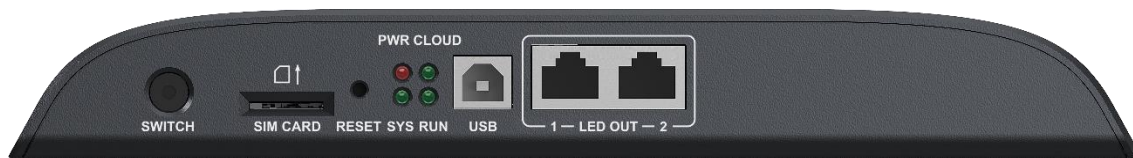
The TB40 ships without a 4G module. Users have to purchase 4G modules separately if needed.

Network connection priority: Wired network > Wi-Fi network > 4G network

When multiple types of networks are available, the TB40 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"> <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                                                                        |
| RESET    | Factory reset button<br>Press and hold this button for 5 seconds to reset the product to its factory settings.                                                         |
| USB      | Reserved USB (Type B) port                                                                                                                                             |
| LED OUT  | Gigabit Ethernet outputs                                                                                                                                               |

### Rear Panel



| Name      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SENSOR    | Sensor connectors<br>Connect to light sensors or temperature and humidity sensors.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HDMI      | HDMI 1.4 connectors <ul style="list-style-type: none"> <li>• OUT: Output connector, support for HDMI loop</li> <li>• IN: Input connector, HDMI video input in synchronous mode</li> </ul> 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 TB40 is connected to a fast Ethernet cable and the connection is available.</li> <li>• The green and yellow stay on simultaneously: The TB40 is connected to a Gigabit Ethernet cable and the connection is available.</li> </ul>                                                                       |
| COM2      | 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.                                                                                                                                                                                                                                                                                                                   |
| COM1      | 4G antenna connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| AUDIO OUT | Audio output connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 12V---2A  | Power input connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

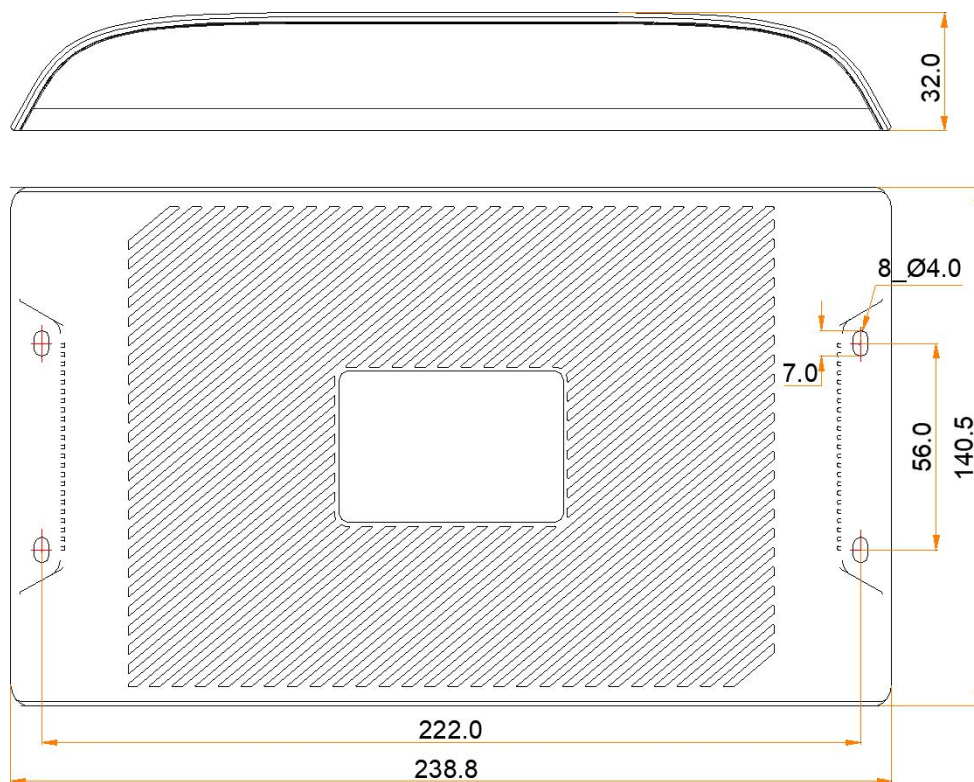
## Indicators

| Name  | Color | Status                     | Description                                                                    |
|-------|-------|----------------------------|--------------------------------------------------------------------------------|
| PWR   | Red   | Staying on                 | The power supply is working properly.                                          |
| SYS   | Green | Flashing once every 2s     | The TB40 is functioning normally.                                              |
|       |       | Flashing once every second | The TB40 is installing the upgrade package.                                    |
|       |       | Flashing once every 0.5s   | The TB40 is downloading data from the Internet or copying the upgrade package. |
|       |       | Staying on/off             | The TB40 is abnormal.                                                          |
| CLOUD | Green | Staying on                 | The TB40 is connected to the Internet and the                                  |

| Name | Color | Status                     | Description                                                     |
|------|-------|----------------------------|-----------------------------------------------------------------|
| RUN  | Green |                            | connection is available.                                        |
|      |       | Flashing once every 2s     | The TB40 is connected to VNNOX and the connection is available. |
|      |       | Flashing once every second | No video signal                                                 |
|      |       | Flashing once every 0.5s   | The TB40 is functioning normally.                               |
|      |       | Staying on/off             | FPGA loading is abnormal.                                       |
|      |       |                            |                                                                 |

## Dimensions

### Product Dimensions



Tolerance:  $\pm 0.3$  Unit: mm

## Specifications

|                       |                           |                                 |
|-----------------------|---------------------------|---------------------------------|
| Electrical Parameters | Input power               | DC 12 V, 2 A                    |
|                       | 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 (L×W×H)                                                                                                                                                                                                    | 385.0 mm × 280.0 mm × 75.0 mm                                                                                                                                       |
|                       | List                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• 1x TB40</li> <li>• 1x Wi-Fi omnidirectional antenna</li> <li>• 1x Power adapter</li> <li>• 1x Quick Start Guide</li> </ul> |
| Dimensions (L×W×H)    | 238.8 mm × 140.5 mm × 32.0 mm                                                                                                                                                                                         |                                                                                                                                                                     |
| Net weight            | 430.0 g                                                                                                                                                                                                               |                                                                                                                                                                     |
| IP Rating             | IP20<br>Please prevent the product from water intrusion and do not wet or wash the product.                                                                                                                           |                                                                                                                                                                     |
| 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> Note: Third-party applications are not supported. |                                                                                                                                                                     |

## Media Decoder 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<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 | 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        | 2304P@60fps        | 80Mbps                        | AVI, MKV, MP4, MOV,     | Support for field coding              |

| Category    | Codec       | Resolution                                                          | Maximum Frame Rate | Maximum Bit Rate (Ideal Case) | File Format            | Remarks                                |
|-------------|-------------|---------------------------------------------------------------------|--------------------|-------------------------------|------------------------|----------------------------------------|
|             |             | pixels                                                              |                    |                               | 3GP, TS, FLV           | 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/H EVC | 64×64 pixels to 4096×2304 pixels                                    | 2304P@60fps        | 100Mbps                       | MKV, MP4, MOV, TS      | Support for Main Profile, Tile & Slice |
| GOOGLE VP8  | VP8         | 48×48 pixels to 1920×1088 pixels                                    | 30fps              | 38.4Mbps                      | WEBM, MKV              | N/A                                    |
| GOOGLE VP9  | VP9         | 64×64 pixels to 4096×2304 pixels                                    | 60fps              | 80Mbps                        | WEBM, MKV              | N/A                                    |
| H.263       | H.263       | SQCIF (128×96)<br>QCIF (176×144)<br>CIF (352×288)<br>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                                    |