XTEC

INSTALLATION & USER GUIDE

MP-2

High-Definition Media Player

Part Number: 100-0582

Blank

CONTENTS

SAFETY WARNINGS

1 NOT FOR USE IN SAFETY APPLICATIONS. This device is designed for entertainment and educational applications only.

2 This product is intended for industrial applications, and is not suitable for use in domestic or home environments. Only trained technicians and engineers should operate this device.

3 This product is not designed for wet or damp environments. Submerging the product in a liquid will void the warranty.

4 Never store or operate this product outside the temperature range specified in this manual.

5 Always use a stable regulated power supply with ample current. Never exceed the maximum supply voltage specified in this manual. Power supplies with a voltage less then 10% of the specified supply voltage, or with less current than is required by the application, may result in erratic behaviour, or the device resetting or shutting down.

6 Never exceed the maximum specified control input voltages. Never exceed the maximum specified control output voltages or load current.

7 Never store or operate this product above the maximum altitude specified in this manual.

8 Use a soft damp cloth and mild detergent if you need to clean this product. Never clean this product with a solvent or abrasive cleaning solution. Never use an abrasive pad to clean the product. Disconnect power before cleaning, and protect all exposed connectors and pins.

9 Keep this product and its packing materials away from children. This product is not intended for use by minors.

SYMBOLS & CONVENTIONS

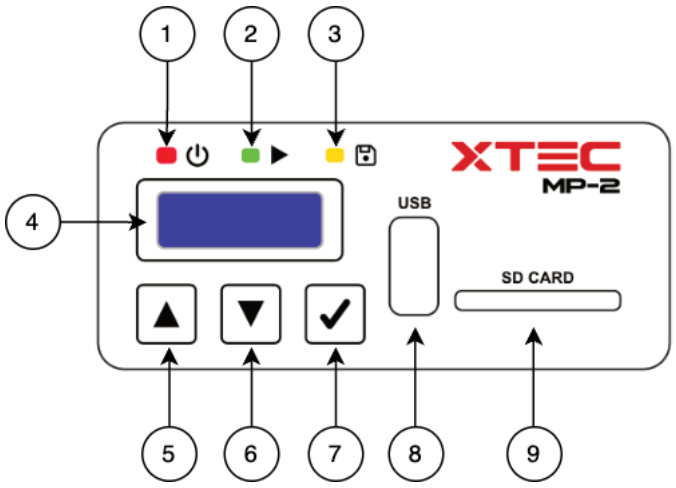
Warnings and critical information. Make sure you read and understand the accompanying notes, and adhere to any instructions provided.

Useful information that may help you better understand and use the product. Take note of any recommendations or suggestions provided.

Note the following regarding fonts and symbols:

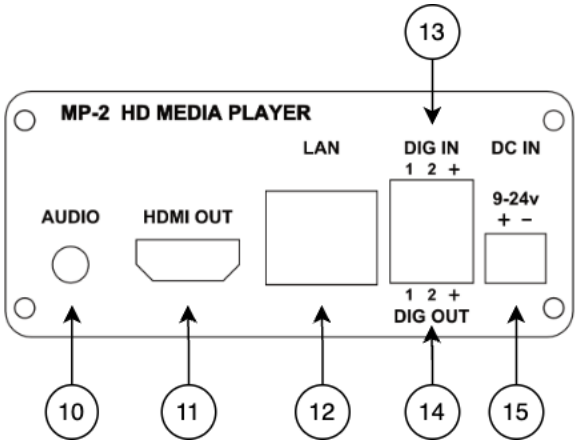
- Code or commands are shown in Courier font. Eg: `COMMAND A`

FRONT PANEL



1	Power on LED	6	Menu Down navigation button
2	Play LED. Indicates media is playing	7	Menu Enter / OK button
3	SD card access LED. Indicates SD card is in use	8	USB A connector, for keyboard control
4	OLED display	9	SD card connector, for media playback
5	Menu Up navigation button		

REAR PANEL



10	3.5mm stereo line audio output jack	13	Digital input terminals 1 & 2, and supply + volts output.
11	Full size HDMI video & audio output	14	Digital output terminals 1 & 2, and supply + volts output.
12	RJ45 Ethernet LAN port	15	9-24v DC supply input.

Never connect a voltage over 24v DC to any terminal of the MP-2. Never use AC power with the MP-2.

GENERAL DESCRIPTION

The XTEC MP-2 is a compact High Definition media player, intended for video and / or audio playback in professional installations. It is housed in a tough extruded aluminium enclosure, and includes surface mount brackets.

Video (with embedded audio) is output via a full size HDMI connector, and there is also a 3.5mm stereo jack available for audio. Media and device configuration are stored on a removable full-size SD card, making backup and restore very easy.

Media can be installed either by copying files onto the SD card, or by FTP over Ethernet.

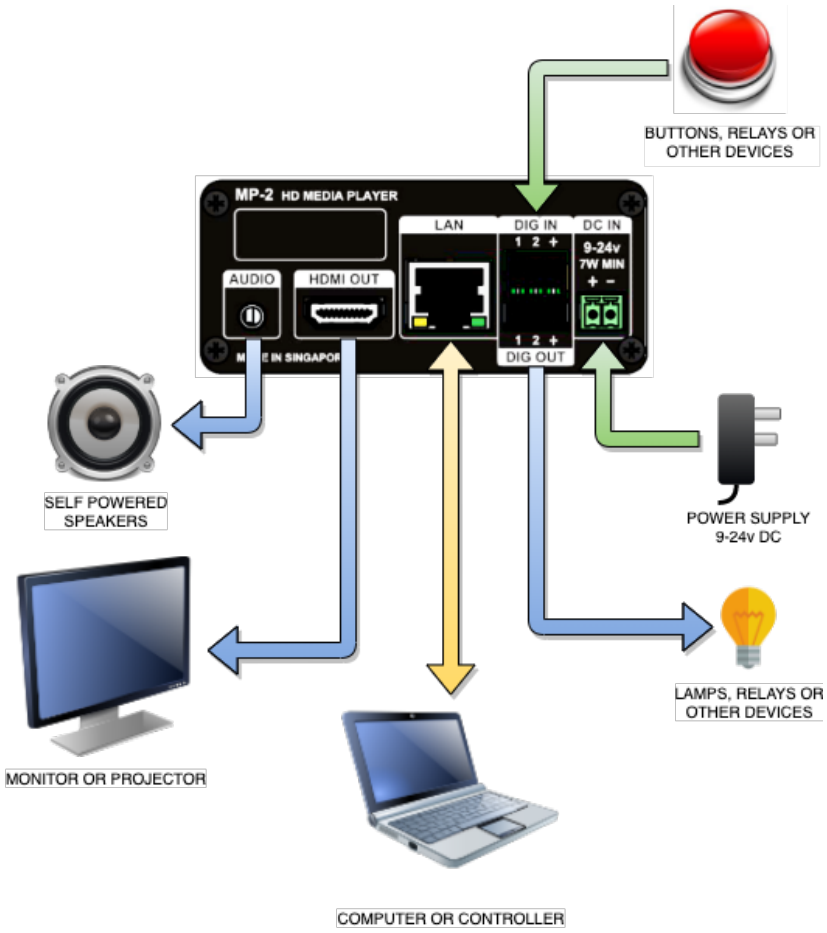
Remote control options include Ethernet via a simple TCP/IP protocol, two digital inputs that can be configured to operate in various modes, and USB Keyboard triggers. The MP-2 can also be configured for auto-play on boot.

There are two 1A "NPN" type digital outputs that can be configured in various modes, for controlling devices such as indicator lamps or relays. All settings can be configured via a web browser.

During playback the MP-2 provides seamless looping of files. Files can also be pre-loaded, and upon playing the output will seamlessly switch.

An OLED display, push buttons and indicators provide for local setup and testing.

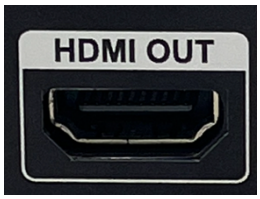
The MP-2 is powered from 9 to 24v DC.



Typical Application

CONNECTORS & WIRING

HDMI Output



This is a standard 19-pin HDMI socket, outputting HD video and stereo audio. Note the MP-2 output is fixed at 1920 x 1080 @ 60Hz.

Audio Output

3.5mm (1/8”) stereo jack, outputting line level unbalanced audio.

Ethernet

RJ45 8-pin connector for 10/100BASE-T Ethernet. Used for FTP file download and TCP/IP control (see relevant chapters later in this manual).

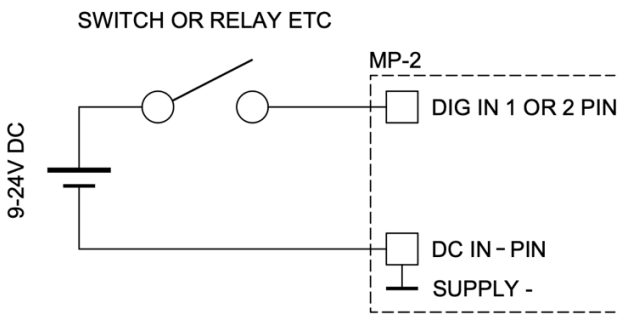
Digital Inputs

The MP-2 has two digital inputs, used for trigging various commands (see Configuration chapter later in this manual).

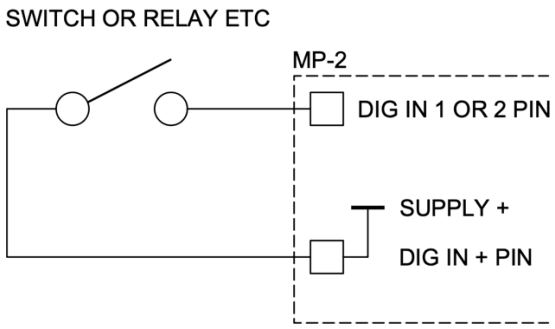
- Apply 9-24v to an input to turn it on
- Apply 0v to an input (or disconnect it) to turn it off

For convenience, the “+” pin on this connector is the same voltage as the DC IN supply, and can be used to trigger inputs.

Typical input wiring when using an external supply:



Typical input wiring when using the internal supply (the “+” pin):



Never connect voltages over 24v to the MP-2. Never connect an AC voltage.

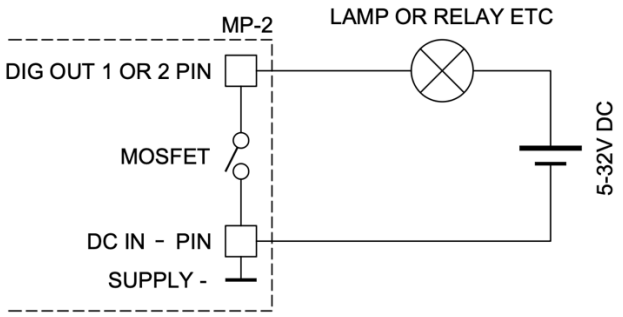
Digital Outputs

The MP-2 has two MOSFET digital outputs, which can be configured to turn on in various states. Outputs are floating (not connected) when off, and switch to ground when on. This type of output is often referred to as “NPN”, Open Drain, or Sinking.

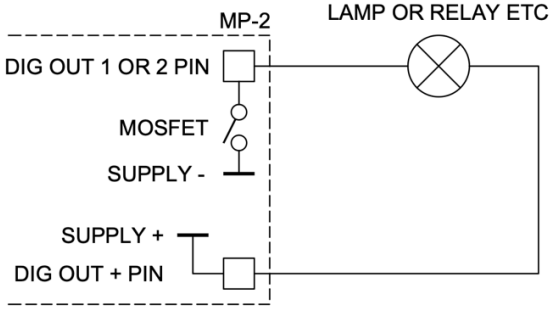
Maximum switching current is 2A per channel. Maximum switching voltage is 36v DC. Outputs are protected from overload and short circuit. Typical max on resistance is 0.3Ω.

For convenience, the “+” pin on this connector is the same voltage as the DC IN supply, and can be used to power small loads up to **maximum 1A total for both outputs**. If too much power is drawn by this pin the internal fuse may blow, which will require factory repair.

Typical output wiring when using an external supply:



Typical output wiring when using the internal supply (the “+” pin):



Be careful of your load wiring if polarity is important.

DC Power Supply In

Power supply input. 9-24v DC, recommend 2A minimum.

Front Panel USB

The USB A connector on the front panel is intended to be used with a keyboard, or – more likely – a keyboard emulator that allows hardware switches to simulate keystrokes. This feature expands the number of media files and other functions that can be triggered by switch contacts.

The keyboard character mapping is as follows:

Key	Function
Q	Play file 00001
W	Play file 00002
E	Play file 00003
R	Play file 00004
A	Play file 00005
S	Play file 00006
Space	Play / Pause
→	Play next file
ESC	Stop playback

Key	Function
D	Play file 00007
F	Play file 00008
Z	Play file 00009
X	Play file 00010
C	Play file 00011
V	Play file 00012
Enter	Play current file
←	Restart current file

The above is compatible with commonly available small keyboard emulators available online.

USER INTERFACE

The MP-2 has a small OLED two-line display, with associated buttons for up, down and enter.

Currently the display is only used to display the following:

- Boot status
- Name of currently playing file

All device configuration takes place via a web browser connected to the MP-2.

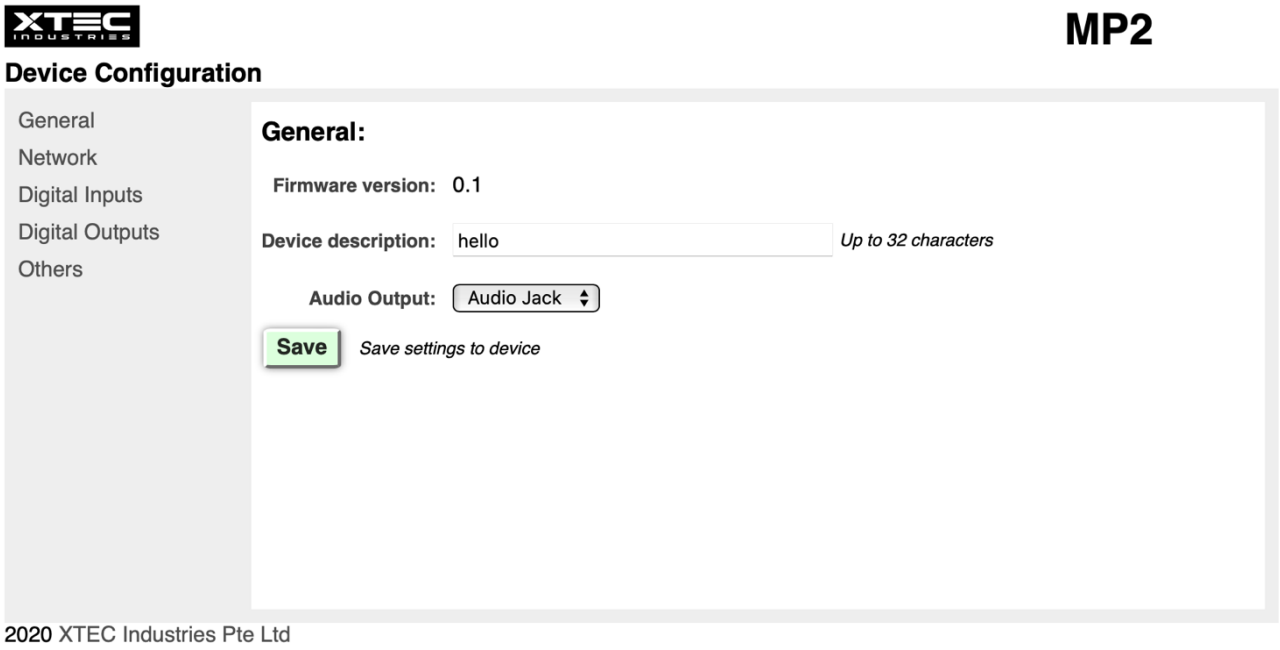
Future firmware revisions will add more functionality.

CONFIGURATION

The MP-2 is configured via a web browser. Simply connect your PC to the MP-2 Ethernet port, and set the IP addresses to be in the same sub-net range. Then type the IP address of the MP-2 into the browser search bar, and you will see the Configuration page. Click on the links on the left of the page to access the various pages.

The MP-2 factory default IP address is: **192.168.1.200.**

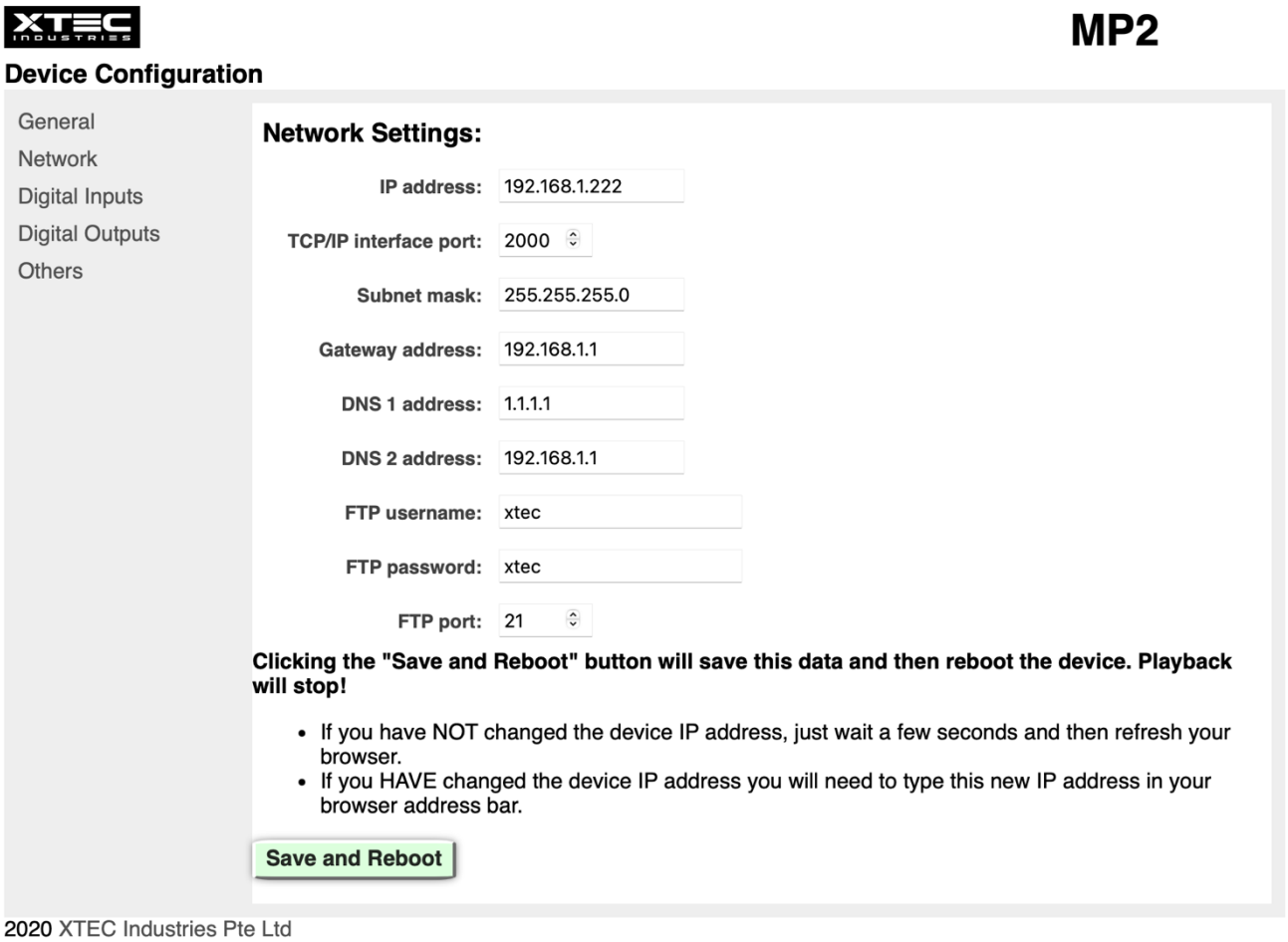
General



- Firmware version: Displays the version of the firmware installed in the MP-2.
- Device Description: Enter any preferred name. This can be useful when there are multiple MP-2's on a network.
- Audio Output: Select to send audio either via the HDMI output or the 3.5mm audio jack.

Click Save to store the settings in the MP-2.

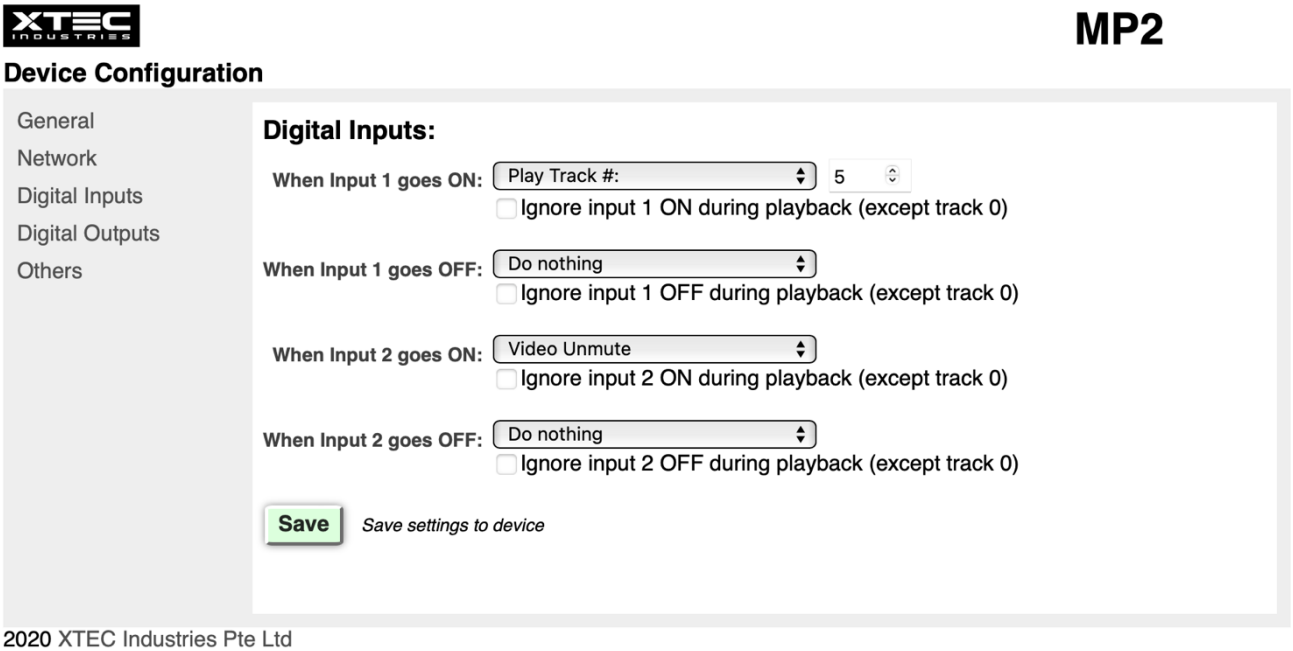
Network



- IP Address: Normal IP address. Default is 192.168.1.222.
- TCP/IP interface port: Set the port number for Ethernet control. Default is 2222.
- Subnet mask: Standard setting for network mask. Default is 255.255.255.0.
- Gateway address: Usually your router address if needed.
- DNS1 / DNS2 address: Currently not required, since the MP-2 does not need to resolve domain names. May be required in the future.
- DNS2 address: Same as DNS1.
- FTP username / password: Required if you are accessing the SD Card via FTP.
- FTP port: Standard FTP transfers use port 21, but you can change the port here.

Click Save and Reboot to store the settings in the MP-2. Remember, if you have changed the IP address you many need to re-enter this new IP address in the browser to continue configuration.

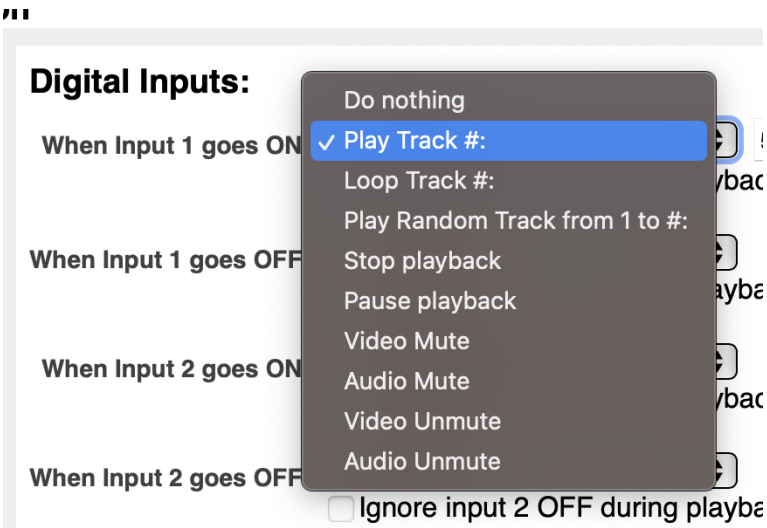
Digital Inputs



The MP-2 has two digital inputs, which can be connected to switches, relay contacts or other devices.

This page configures what happens when the digital inputs change. Note you can disable input actions during playback, which is useful if you want to prevent the media from being interrupted during playback.

You can configure different actions for both the “goes ON” and “goes OFF” states, as follows:

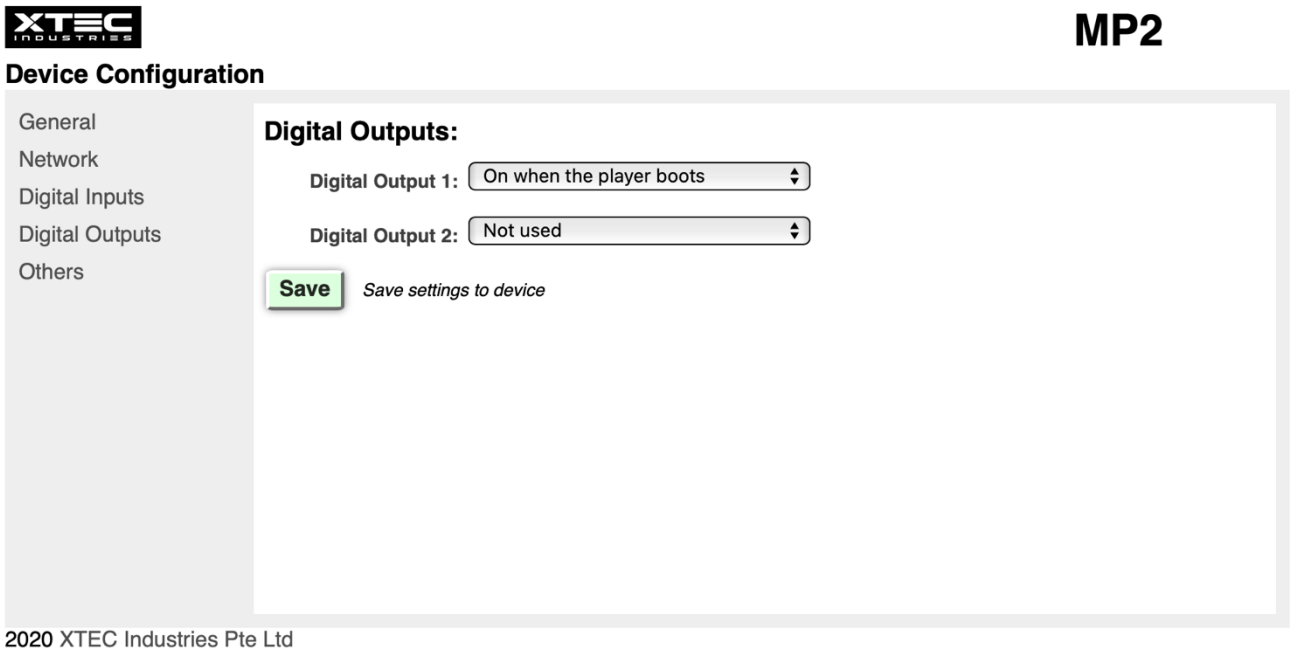


The options are:

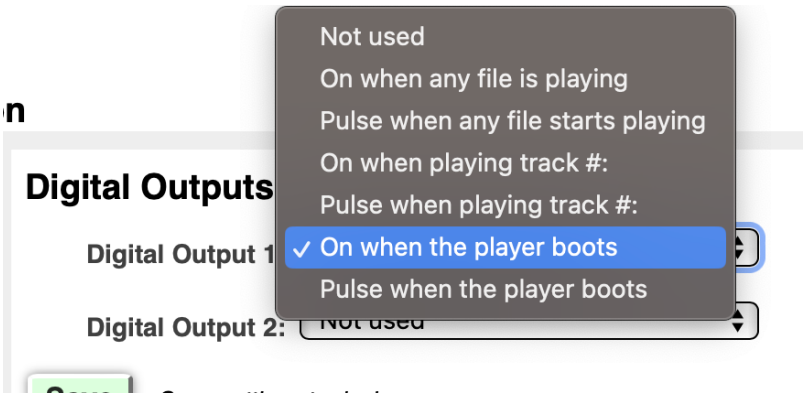
Action	Description	Action	Description
Do nothing	Input action disabled	Pause playback	Pause playback, and freeze the last frame displayed
Play Track #	Play the track number set in the spin box. Extra zeros will be automatically prefixed (eg; “5” will become “00005”.	Video mute	Turn off the video output, display a black image
Loop Track #	Same as Play, but track will repeat until stopped.	Audio mute	Silence the audio output
Play Random Track from 1 to #	Will randomly play a track between 00001 to the number you enter in the spin box. Eg; If you enter 10, then a random track in the range 00001 to 00010 will play.	Video unmute	Resume displaying video normally
Stop playback	Stops playback, and display a black image	Audio unmute	Resume playing audio normally

Click the Save button to store the settings in the MP-2.

Digital Outputs



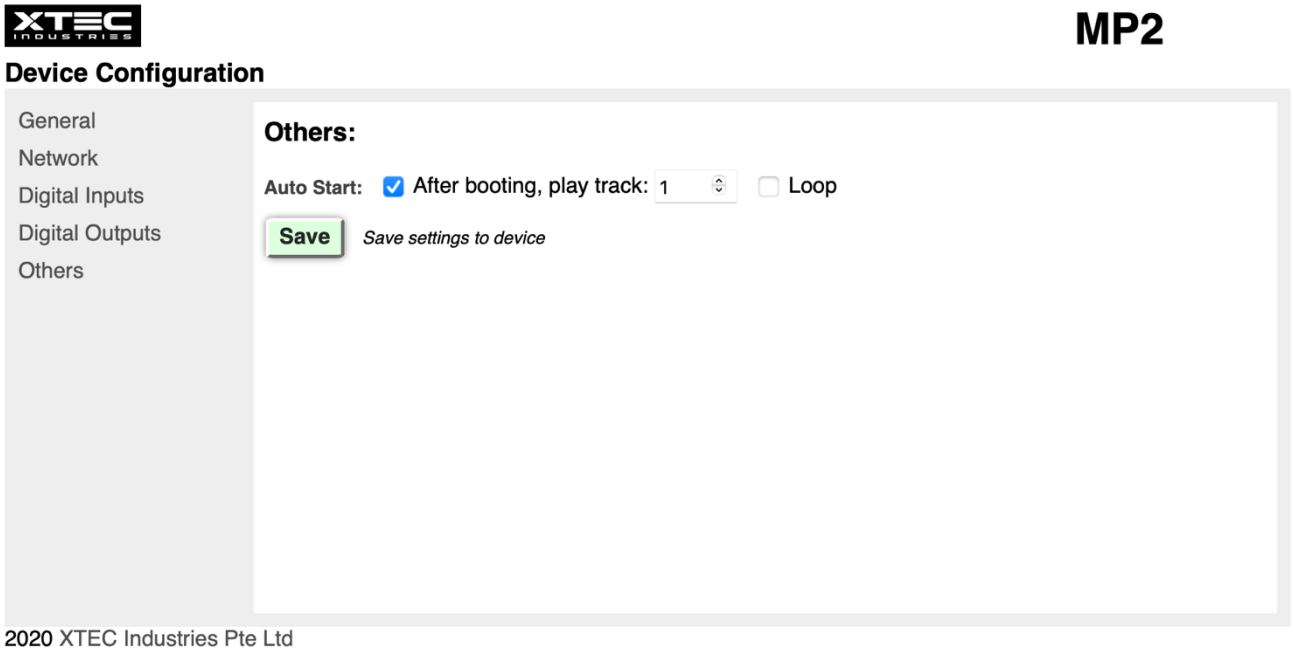
The MP-2 has two digital outputs, which can be used to switch indicators, relays coils or other low voltage loads.



The options are:

Action	Description	Action	Description
Not used	Output not used	Pulse when playing track #	Briefly turn on for 0.5 seconds when the specified track starts playing.
On when any file is playing	The output will be turned on when a file begins playback, and will only turn off when the file stops playing (Stop or Pause).	On when the player boots	Turn output on once the player has booted. The output will remain on until the power is turned off
Pulse when any file starts playing	The output will briefly turn on for 0.5 seconds when any file begins playing.	Pulse when the player boots	Briefly turn on for 0.5 seconds when the player boots.
On when playing track #	Turns on when the specified track starts playing, and turns off when that track stops.		

Others

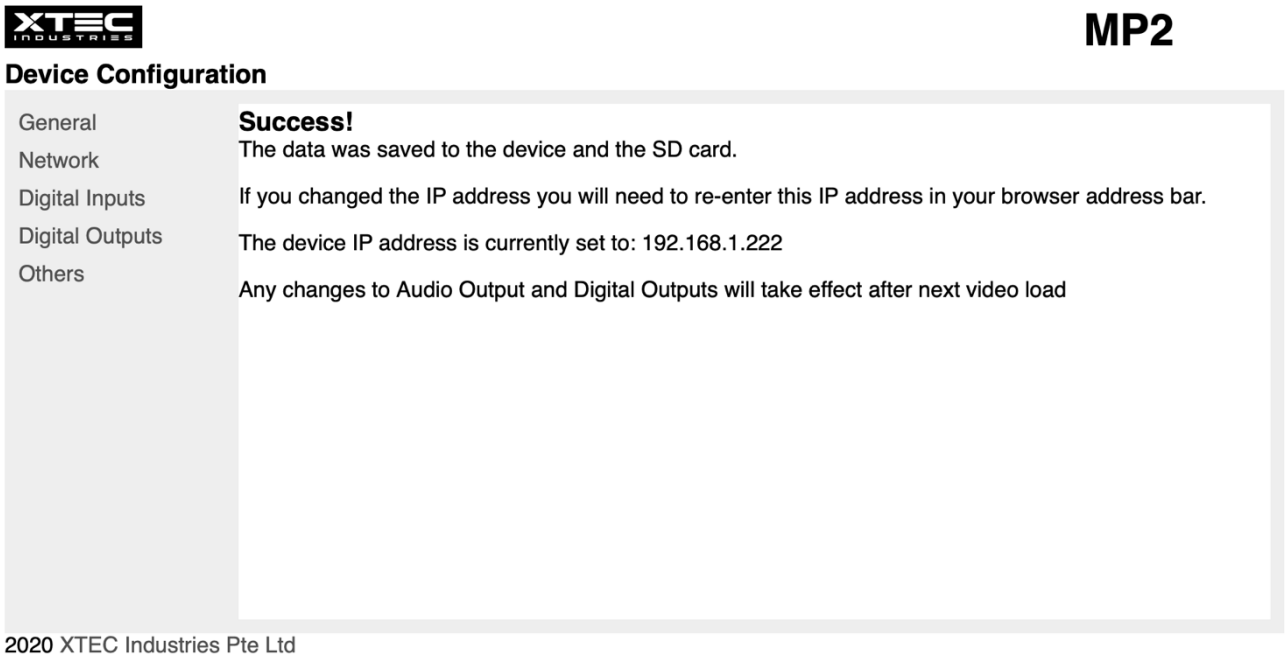


This page currently has only one setting:

- Auto Start: Check this box to have the MP-2 automatically play the specified track. Check the Loop option to have the file repeat until stopped.

Save

Once the setting have been successfully saved to the MP-2, the following page will be shown:



You can then continue configuration, or disconnect. Note all settings are saved to the SD card, so they can be copied and backed up.

ETHERNET CONTROL

The MP2 can be controlled by simple ASCII commands over a TCP/IP connection. The connection IP address and port can be configured through the web interface.

- All commands are **two** characters long. These can be terminated with a carriage return **<0D>**, a new line **<0A>**, both, or neither. In cases where information (such as a track number) is required, this information is placed *before* the two-character command (see examples below).
- Upon receiving a valid command, the MP2 will immediately send response code **R<0D>** indicating it has received the data.
- After completion of an operation the MP-2 may send a return code. All return codes from the MP2 end with a carriage return **<0D>.**
- If a command is not understood, the MP2 will send error response code **ER<0D>**.

Error! Reference source not found. shows an example of correct communication. “1PL” means track 1 Play:

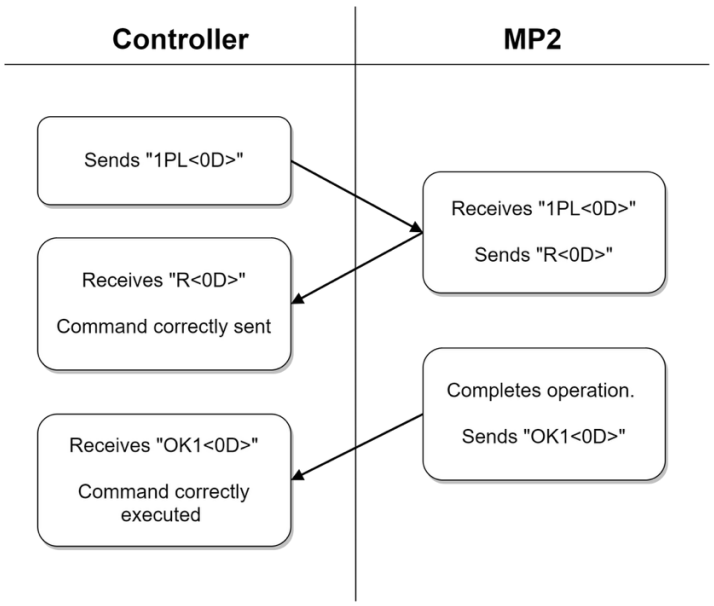


Figure 1

Figure 2 shows and example of sending an incorrect message:

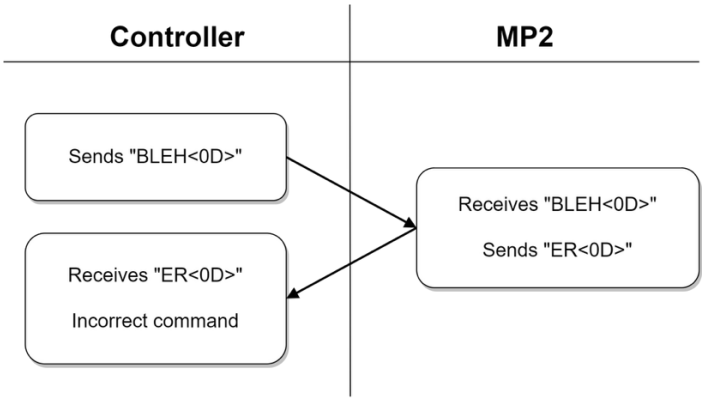


Figure 2

Commands

LD – Load Video

Description:	Load a media file, prepare for playback. Media files *must* include a FIVE digit file number just before the extension. For example: “00001.mp4” or “File00002.mp4”. The LD command does not interrupt any currently playing media. It only pre-loads the specified media in preparation to play.
Command:	*(File Number)***LD**
Response codes:	**OK1<0D>** Success: Video loaded
	OK2<0D> Success: Video already playing
	ER1<0D> Failure: Could not find file. No file exists with number sent.
	ER2<0D> Failure: Incorrectly formatted file number. A file number needs to consist only of numbers
	ER3<0D> Failure: File load error. File found, but loading failed. This can be for different reasons, but most likely the file format is not compatible. The file may also be corrupt, or not correctly encoded.
	ER4<0D> Failure: Unknown failure. Something has gone wrong that was not recognised. Check the file. Try another file to see if that loads. Reboot the MP2 and try again.

Examples:	Received command, where file 00001 exists: **1LD<0D>** Response: **R<0D>** **OK1<0D>**
	Received command, where file 00022 does not exist: **22LD<0D>** Response: **R<0D>** **ER1<0D>**

SE LD – Load and Seek

Description:	Load a media file and cue to a specified frame, prepare for playback. Media files *must* include a FIVE digit file number just before the extension. For example: “00001.mp4” or “File00002.mp4”. The SE LD command does not interrupt any currently playing media. It only pre-loads the specified media in preparation to play.
Command:	*(HH:MM:SS:FF)***SE***(File Number)***LD**
Response codes:	**OK1<0D>** Success: Video loaded and seeked to position.
	OK2<0D> Success: Video loaded. Seeked to position, but frame position has been ignored because of an error. This could be because the video does not include FPS information.
	OK3<0D> Success: Video loaded. Seek has failed. Incorrect seek time stamp sent. Check time stamp is in form HH:MM:SS:FF
	OK4<0D> Success: Video loaded. Seek has failed. MM must be between 00 and 59.
	OK5<0D> Success: Video loaded. Seek has failed. SS must be between 00 and 59.

OK6<0D>

Success: Video loaded. Seek has failed. FF must be between 00 and video frame rate.

OK7<0D>

Success: Video loaded. Seek has failed. Sent seek time is more than video duration.

ER1<0D>

Failure: Could not find file. No file exists with number sent.

ER2<0D>

Failure: Incorrectly formatted file number. A file number needs to consist only of numbers

ER3<0D>

Failure: File load error. File found, but loading failed. This can be for different reasons, but most likely the file format is not compatible. The file may also be corrupt, or not correctly encoded.

ER4<0D>

Failure: Unknown failure. Something has gone wrong that was not recognised. Check the file. Try another file to see if that loads. Reboot the MP2 and try again.

Example: **00:00:10:00SE1LD<0D>**

Response:

R<0D>

OK1<0D>

PL – Play

Description:	Plays a media file once, then stops. If the PL command is prefixed with a FIVE digit file number, this is the media file that will be played. Eg; 00001PL would play media file "00001.mp4". If the PL command is sent *without* a prefix: • If a media file has been previously loaded via the "LD" command, this file will now play. • If the MP-2 is paused, it will begin playing • If the MP-2 is already playing, the command will be ignored • If the MP-2 is currently looping, it will continue playing but stop looping at the end
Command:	*(Video Number)***PL** or **PL**
Response codes:	**OK1<0D>** Success: Video playing
	ER1<0D> Failure: Could not find file. No file exists with number sent.
	ER2<0D> Failure: Incorrectly formatted file number. A file number needs to consist only of numbers
	ER3<0D> Failure: File load error. File found, but loading failed. This can be for different reasons, but most likely the file format is not compatible. The file may also be corrupt, or not correctly encoded.
	ER4<0D> Failure: Unknown failure. Something has gone wrong that was not recognised. Check the file. Try another file to see if that loads. Reboot the MP2 and try again.
	ER5<0D> Failure: Play has been sent with no video number, and no file is currently playing or been loaded.

Example:	Sent command: **1PL<0D>** Response: **R<0D>** **OK1<0D>**

LP – Loop

Description:	Loops (repeats) a media file. If the LP command is prefixed with a FIVE digit file number, this is the media file that will be looped. Eg; 00001LP would loop media file “00001.mp4”. If the LP command is sent *without* a prefix: • If a media file has been previously loaded via the “LD” command, this file will now play and loop. • If the MP-2 is paused, it will play and loop • If the MP-2 is already looping, the command will be ignored • If the MP-2 is playing (not looping), it will continue playing and now loop at the end
Command:	*(Video Number)***LP** or **LP**
Response codes:	**OK1<0D>** Success: Video looping
	ER1<0D> Failure: Could not find file. No file exists with number sent.
	ER2<0D> Failure: Incorrectly formatted file number. A file number needs to consist only of numbers
	ER3<0D> Failure: File load error. File found, but loading failed. This can be for different reasons, but most likely the file format is not compatible. The file may also be corrupt, or not correctly encoded.

	ER4<0D> Failure: Unknown failure. Something has gone wrong that was not recognised. Check the file. Try another file to see if that loads. Reboot the MP2 and try again.
	ER5<0D> Failure: Loop has been sent with no video number, and no file is currently playing or been loaded.
Example:	Sent command: **1LP<0D>** Response: **R<0D>** **OK1<0D>**

PA – Pause

Description:	Pause media playback. If the media is already paused, this command will be ignored. Issue a PL command (without any file number prefix) if you need paused media to start playing again.
Command:	**PA**
Response codes:	**OK1<0D>** Success: Media paused
	ER1<0D> Failure: No file is playing
Example:	Sent command: **PA<0D>** Response: **R<0D>** **OK1<0D>**

ST – Stop

Description:	Stop media playback. The video output will be black. This command un-loads the media.

Command:	**ST**
Response codes:	**OK1<0D>** Success: Video stopped
	ER1<0D> Failure: No file is playing
Example:	Sent command: **ST<0D>** Response: **R<0D>** **OK1<0D>**

SE – Seek

Description:	Sets position in a playing video, based on time stamp.
Command:	*(HH:MM:SS:FF)***SE**
Response codes:	**OK1<0D>** Success: Seeked to position.
	OK2<0D> Success: Seeked to position, but frame position has been ignored because of an error. This could be because the video does not include FPS information.
	ER1<0D> Failure: Incorrect seek time stamp sent. Check time stamp is in form HH:MM:SS:FF
	ER2<0D> Failure: MM must be between 00 and 59.
	ER3<0D> Failure: SS must be between 00 and 59.
	ER4<0D> Failure: FF must be between 00 and video frame rate.

	ER5<0D> Failure: Sent seek time is more than video duration.
	ER6<0D> Failure: No file is playing.
Example:	**00:00:10:00SE<0D>** Response: **R<0D>** **OK1<0D>**

VM – Video Mute

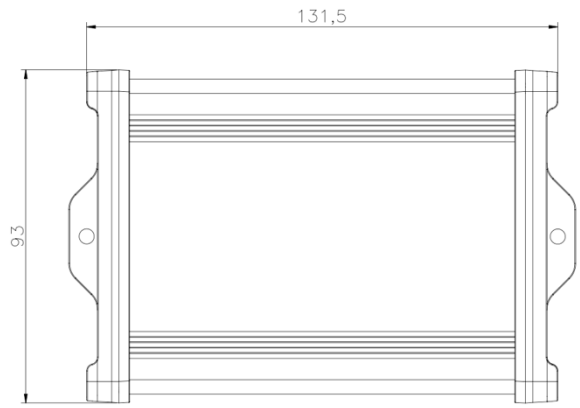
Description:	Controls whether the video is muted (blanked out) or unmuted. To mute, send 1. To unmute, send 0.
Command:	*(0 for unmute or 1 for mute)***VM**
Response codes:	**OK1<0D>** Success: Video unmuted
	OK2<0D> Success: Video muted
	ER1<0D> Failure: Incorrect or no option sent
	ER2<0D> Failure: Wrong option sent. Specify 0 for unmute or 1 for mute
Example:	**1VM<0D>** Response: **R<0D>** **OK2<0D>**

AM – Audio Mute

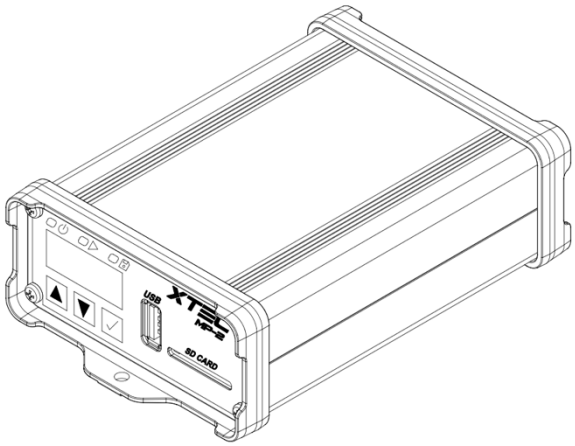
Description:	Controls whether the audio is muted or unmuted. To mute, send 1. To unmute, send 0.

Command:	*(0 for unmute or 1 for mute)***AM**
Response codes:	**OK1<0D>** Success: Audio unmuted
	OK2<0D> Success: Audio muted
	ER1<0D> Failure: Incorrect or no option sent
	ER2<0D> Failure: Wrong option sent. Specify 0 for unmute or 1 for mute
Example:	**1AM<0D>** Response: **R<0D>** **OK1<0D>**

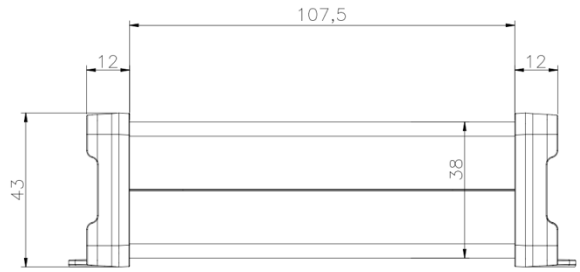
DIMENSIONS



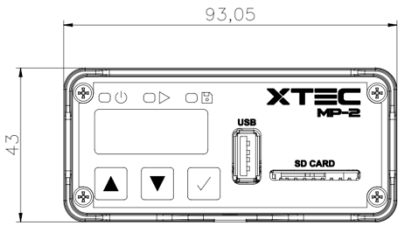
TOP VIEW



ISOMETRIC



FRONT VIEW



SIDE VIEW

SPECIFICATIONS

Media	Video File Types	H.264 / H.265 / MPEG2
	Audio File Types	MP3 / WAVE
	Video Output Resolution	Max 1920 x 1080 @ 60 fps. Lower resolution video files will be stretched to fit 1920 x 1080.
	Frequency Response	20Hz – 20KHz -3dB
	Video Output (with audio [1])	Full size 19 pin HDMI connector
	Audio Output [1]	3.5mm (1/8") stereo jack
Control	Ethernet	RJ45 for 10/100BASE-T, TCP/IP control and FTP.
	Digital Inputs	Two opto isolator inputs, apply 9-24v to turn on. Various operating modes available. Uses 3-pin 3.81mm pluggable connector.
	Digital Outputs	Two sinking ("NPN") type solid state outputs, rated at 2A @ 32v DC. Over current protection. Uses 3-pin 3.81mm pluggable connector.
	USB	USB type A connector for standard PC keyboard. Various keys can trigger file playback, and perform other actions.
Power Supply	Voltage	9 – 24v DC
	Current	With no external loads: 0.5A Maximum current with loads: 2A Protected with internal fuse.
	Connector	2-pin 3.81mm plug in terminal block
Physical	Dimensions	131.5 x 93 x 43mm
	Operating Temperature	-20 to 85℃
	Protection	IP20
	Weight	150g
	Heat load	12w excluding loads
Other	Storage Media	Full size SD card
	User Interface	0.91" OLED, 3 buttons, 3 LED's
	File Transfer	Via SD card to FTP
	Warranty	3 years from date of purchase

1. Either HDMI *or* 3.5mm line out available. Select in configuration web page.

WARRANTY

Limited Warranty

This product is warranted to be free from defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase. This Limited Warranty is valid only for the original purchaser and is non-transferable.

During the warranty period, if this product is found to be defective, we will repair or replace it, at our discretion, without charge. This warranty does not cover damage caused by misuse, abuse, accidents, unauthorized repairs, or alterations.

To obtain warranty service, please contact our customer service team and provide proof of purchase. We reserve the right to request the return of the defective product for inspection.

This Limited Warranty is the sole and exclusive warranty for the product, and no other warranties, express or implied, are made. In no event shall we be liable for any incidental, consequential, or special damages.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or country to country.

For product support please visit

www.xtec-ind.com

Manual version 1