



MX HDMI CABLES

1.3V MX HDMI CABLES:

MX-2593: HDMI/HDMI DIGITAL HIGH POWER CORD.

MX-2691: HDMI 19 PIN MALE/ HDMI 19 PIN MALE CORD G.P

MX-2692: HDMI 19 PIN MALE/HDMI 19 PIN MALE CORD G.P.

MX-2782: HDMI 19 PIN MALE/ HDMI 19 PIN MALE(DUAL MOULDED)CORD.

MX-2964: HDMI 190PIN MALE/HDMI 19 PIN MALE 180 DEGREE ROTATABLE CORD.

MX-2965: HDMI 19 PIN MALE/HDMI 19 PIN MALE FLAT CORD.

MX-3018: HDMI 19 PIN MALE STRAIGHT/ HDMI 19 PIN 90 DEGREE MALE RTANGLE CORD DUAL MOULDED.

MX-3019: HDMI 19 PIN MALE RTANGLE/ HDMI 19 PIN 90DEGREE RTANGLE.

1.4V MX HDMI CABLES:

MX-3022: HDMI 19 PIN MALE/ HDMI 19 PIN MALE CORD(G.P)(ROTATABLE)

MX-3023: HDMI 19 PIN MALE/ HDMI 19 PIN MALE CORD FLAT CABLE(G.P)

MX-3059: HDMI 19 PIN MALE 1.3c G.P TRIPLE SHEILD TINT COPPER (BUILT IN CIRCUIT)

MX-3110: HDMI 19 PIN MALE/ HDMI 19 PIN MALE (G.P)

MX-3134: HDMI 19 PIN MALE/ HDMI 19 PIN MALE CORD LOCK TYPE

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MX APPLE HDMI CABLES:

MX-3244: MX HDMI 19 PIN MALE TO HDMI 19 PIN MALE.

MX-3245: MX HDMI 19 PIN MALE TO HDMI 19 PIN MALE RIGHT ANGLED.

MX-3246: MX HDMI 19 PIN MALE TO HDMI 19 PIN MALE FLAT CABLE.



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Introduction

Congratulations on purchase of the MX HDMI Cable.

MX has product range over **3500** products. MX categories are home theater Cables and Connectors, Computer/Laptop Accessories, Pro Audio/Studio Cables and Connectors, Audio/Video Components and Accessories, Fiber Optic Components and Accessories, Cable TV Components and Accessories.

The **MX HDMI Cables** is the first and only industry supported, uncompressed, all digital audio/video interface. Delivering crystal clear, all digital audio-video via a single cable. MX DMI simplifies cabling and provides you with a high quality home theatre experience. HDMI provides an interface between any audio/video source, such as a set-top box, DVD Player, or A/V Receiver and an audio and/or video monitor, such as a digital television(DTV), over a single cable. New Version of the HDMI standard also include support for Ethernet communication links.

MX HDMI Cables supports standard, enhanced, or high definition video plus multi-channel, 192 KHz, uncompressed digital audio and all currently available compressed formats Dolby True HD and DTS-HD Master Audio with bandwidth to spare to accommodate future enhancement and requirements. Version 1.4 adds HDMI Ethernet, an audio return channel, support for 3D video formats, high definition resolution of 4k x 2k, expanded color spaces, micro connector support and support for Automotive Connection System.



HDMI Importance

MX HDMI means simpler and higher quality entertainment experience. It provides the highest possible uncompressed video and audio quality over a thin and easy to use cable with a simple passive adaptor or cable to connect between the two interfaces. Most importantly, it adds support for up to 8 channels of full resolution digital audio, all on a single cable.

Since its inception, **MX HDMI** has the ability to transmit basic control codes from device to device, making the goal of system integration easier to achieve.

MX HDMI addresses the complexity issue by both reducing the cable count and easing the process of interconnecting the various devices that make up the typical home theatre entertainment system.

FEATURES

1. Quality:

Because **MX HDMI** is a digital interface, it provides the best quality video since there are no losses analog to digital conversions that are required for analogue connections. The difference is especially noticeable at higher resolutions such as 1080p or higher. Digital video will be sharper than component, and eliminates the softness and ghosting found with composite. Small, high contrast details such as text brings this difference out the most.

2. Ease of Use:

MX HDMI combines video and multi channel audio into a single cable, eliminating the cost, complexity, and confusion of multiple cables currently used in A/V systems. This is particularly beneficial when equipment is upgraded or added.

3. Intelligence

MX HDMI supports two way communication between the video source and the DTV, enabling new functionality such as automatic configuration and one-touch play. By using HDMI, devices automatically deliver the most effective format for the display that it is connected- eliminating the need for the consumer to scroll through all the format options guessing what will look best.



4. HD Content ready

MX HDMI devices supporting HDCP(copy protection) will have access to premium HD content now and in the future.

VERSIONS

Versions of MX HDMI:

- 1. Version 1.3.**
- 2. Version 1.4.**

Version 1.3 Features:

1. Higher Speed.
2. Deep Color.
3. Broader Color Space.
4. New Mini Connector.
5. Lip Sync.
6. New HD Lossless audio formats.

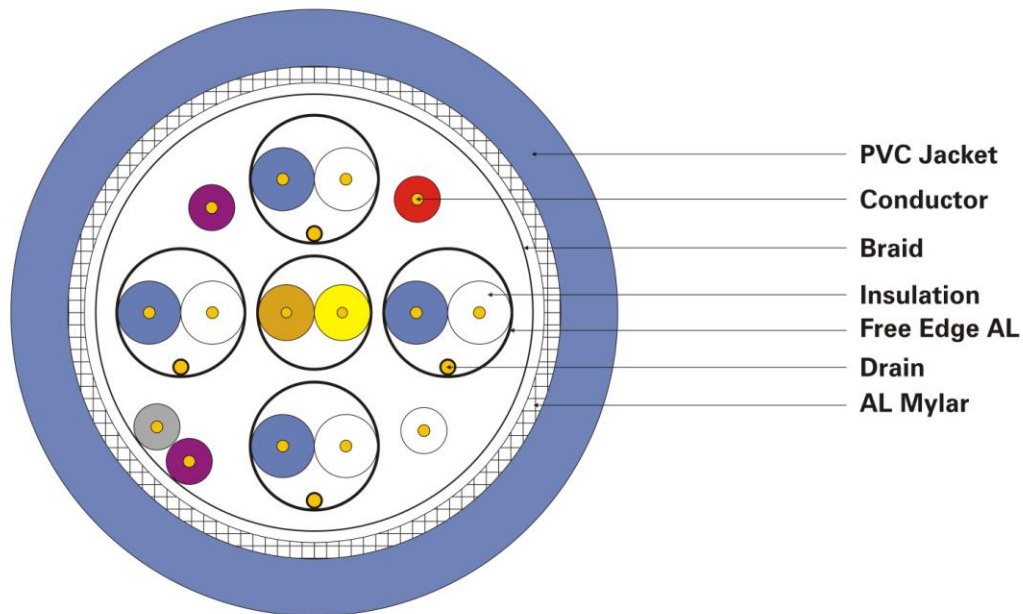
Version 1.4 Features:

1. HDMI Ethernet Channel.
2. Audio Return Channel.
3. 3D Over HDMI.
4. 4K x 2K (Quad HD) Resolution Support.
5. Expanded Support for color Spaces.
6. Real Time Content Recognition.
7. Micro HDMI Connector.
8. Automative Connection System.

MX HDMI VERSION SUPPORT TABLE

HDMI VERSIONS	1.0v	1.1v	1.2v & 1.2a	1.3v	1.3a-c	1.4v
sRGB- Color Space	YES	YES	YES	YES	YES	YES
YCbCr-Color Space	YES	YES	YES	YES	YES	YES
8 channel 24-bit audio	YES	YES	YES	YES	YES	YES
Blue-Ray	YES	YES	YES	YES	YES	YES
Consumer Electronic Control	YES	YES	YES	YES	YES	YES
DVD Audio	NO	YES	YES	YES	YES	YES
Super Audio CD	NO	NO	YES	YES	YES	YES
Deep Color	NO	NO	NO	YES	YES	YES
xvYCC-Color Space	NO	NO	NO	YES	YES	YES
Auto Lip Sync	NO	NO	NO	YES	YES	YES
Dolby TrueHD	NO	NO	NO	YES	YES	YES
DTS-HD Master Audio	NO	NO	NO	YES	YES	YES
Updated CEC Command Set	NO	NO	NO	NO	NO	YES
Ethernet channel	NO	NO	NO	NO	NO	YES
Audio Return channel	NO	NO	NO	NO	NO	YES
3D over HDMI	NO	NO	NO	NO	NO	YES
4k x 2k resolution	NO	NO	NO	NO	NO	YES

Construction of MX HDMI Cable



An MX HDMI cable is actually a bundle of wires - 19 counting the drain wires, and all follow a very rigorous specification in order to deliver the extremely high bitrates that deliver high definition images and audio to your electronics.

There are 4 primary paired connections which represent the TDMS (Transition Minimized Differential Signaling) channels plus a drain wire. This can be thought of as the red, green, and blue color information (note that the colors are presented solely

for illustrative purposes), multi-channel audio information and also the clock. The multi-channel audio is "easy" to pass along the line and is therefore interspersed among the much denser video information carried across these cables. Because of this, there are no dedicated wires for audio. While the three color/audio TDMS channels run at very high speed, the clock channel has much less demands put on it.

The central pair, in this particular cable configuration, is for DDC (Display Data Channel) clock/data which reads EDID (Extended Display Identification) information from the display and which also handles the HDCP handshaking. EDID essentially tells the HDMI transmitter what type of signal and display it is dealing with. These wires are absolutely critical since without this information the entire signal is compromised. If HDCP isn't happy - there simply isn't going to be a signal.

The four single wires are a +5V line, a DDC ground, a hot plug detect wire (a signal that is used to monitor hot plug events so that a new HDCP negotiation can be made), and one for CEC. CEC (Consumer Electronics Control) is the two-way single wire control system

which allows all the devices connected on an HDMI chain to communicate and automate settings and control functions, reducing the amount of controls and remotes needed to operate the components. In theory this is one of the coolest aspects of HDMI. In reality it is an underutilized, disappointing, buggy feature set that is mostly limited to intra-company products. The 5th solo wire is unused.

Shielding is extremely important with HDMI due to the intense data rates which are traveling through the cable. On the outside of the entire cable lies a PVC jacket. Underneath that is a braided shield which typically has around 85%-90% coverage. Underneath this is a helical-wrapped aluminum Mylar material providing 100% coverage. The different shielding works well at different frequencies. For example, braid is better for blocking lower frequency interference (relatively speaking of course), and Mylar foil is much better suited for blocking higher frequency interference. In addition to the master cable bundle, each of the TDMS pairs has Mylar wrap as does the clock channel.

Due to the complexity of HDMI, it is never terminated in the field with a soldering iron or pin tool as you will

see with other connections such as S-video, VGA and component/composite video. One of the few exceptions to this is [Rapid Run](#) - a product by Impact Acoustics (Cables to Go) which utilizes proprietary interface connections to terminate HDMI and DVI-D "tails" and wall plates in the field. It's cool and, according to our tests, it actually works.

Importance of Gold Plated Connectors in MX HDMI

Gold is not as good a conductor as either silver or copper, so gold plating does not improve performance over raw brass. Gold is great for its incredible resistance to corrosion. High Purity gold does not tarnish. Therefore the use of gold plating will ensure that the connector remains in the same operational state, free of tarnish, indefinitely. This will lead to less resistance over time.

How to Judge the Quality of HDMI

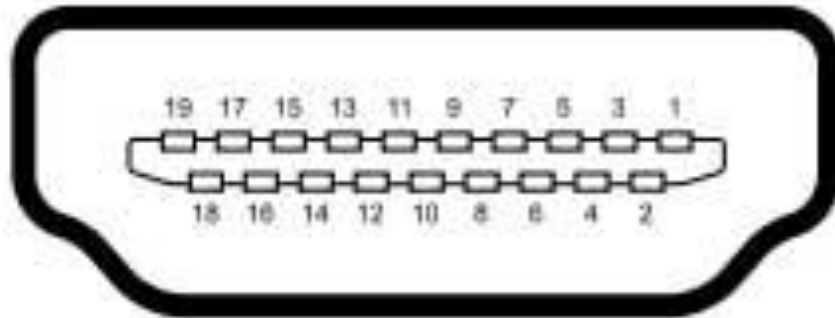
Cable Gauge: 24Awg cable is better than 26, 28 or 30 Awg.

Cable Material: Silver coated copper is best followed By OFC then tinned copper.

Connector: 24k Gold Plating is preferable for longevity of signal quality.

Impedance: look for 100 Ohms +/- 10 Ohms.

PIN CONFIGURATION



PIN NUMBER and Functions

Pin 1	TMDS Data Channel 2+
Pin 2	TMDS Data Channel 2 Shield
Pin 3	TMDS Data Channel 2-
Pin 4	TMDS Data Channel 1+
Pin 5	TMDS Data Channel 1 Shield
Pin 6	TMDS Data Channel 1-
Pin 7	TMDS Data Channel 0+
Pin 8	TMDS Data Channel 0 Shield
Pin 9	TMDS Data 0-
Pin 10	TMDS Clock+

Pin 11	TMDS Clock Shield
Pin 12	TMDS Clock-
Pin 13	CEC
Pin 14	No Connect
Pin 15	DDC Clock
Pin 16	DDC Data
Pin 17	Ground
Pin 18	Power (+5V)
Pin19	Hot Plug Detect

OTHER MX HDMI HARDWARE PRODUCTS

1. HDMI SWITCH AND SWITCHERS.

2. HDMI SPLITTERS.

3. HDMI ADAPTERS:

- **HDMI**
- **DVI**
- **DISPLAY PORT.**

4. HDMI EXTENDERS.

- **Cat5/ Cat 6.**
- **Optical Fiber.**
- **Coax Cable.**

5. HDMI AMPLIFIERS.

6. HDMI LONG LENGTH CABLES UPTO 45 meters.

APPLICATIONS

- Digital Cameras and camcorders.
- Blue Ray/ HD DVD Players.
- Personal Computers.

NOTE:

According to the Standard HDMI Association now there are no more versions in HDMI Cables. Now the Association has classified the cables in new category



Warranty

MDR Electronics gives warranty on the equipment it manufactures to be free from defects in material and workmanship. If equipment fails because of such defects and MX is notified within ONE year from the date of shipment, MX will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications.

Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

THE WARRANTY IS VOID IF THE SEAL OF THE PRODUCT IS BROKEN

The information in this manual has been carefully checked and is believed to be accurate. However, MX assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will MX, be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding Product features and specifications is subject to change without notice.

For the latest warranty coverage information, please visit:

<http://www.mdrelectronics.com/warranty.asp>



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