Application Notes

Overview of HDMI-TPS-95, -96, -97 series extenders
1. Introduction

This document gives an overview of the differences, compatibility and power options of the HDMI-TPS-95, -96, -97 series extenders.

All series are twisted pair HDBaseT™ extenders, which provide extension of uncompressed Full-HD video for long distances over a single CATx cable.

All of them offer bi-directional RS-232, IR, and Ethernet pass-through on the same CATx cable that carries the video signal.

HDMI-TPS-96 and -97 series are supplied with 3-pole Phoenix connector, while HDMI-TPS-95 series has D-SUB9 connector for serial (RS-232) transmission.

WP/FP-HDMI-TPS-TX/RX97 series extenders have the same ports, powering options and functionality with HDMI-TPS-TX/RX9 series extenders, the difference is only the size and design of the enclosure.

HDMI-TPS-97 series can be mounted on a rack shelf or used standalone while the WP/FP-HDMI-TPS-TX/RX97 series designed to place into a wall or furniture.

2. Comparison Chart of HDMI-TPS-95, -96, -97 series
### 3. Compatibility Table

<table>
<thead>
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<th>Connected device</th>
<th>HDMI-TPS-95 series</th>
<th>HDMI-TPS-96 series</th>
<th>HDMI-TPS-97 series</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Video / HDBaseTTM</td>
<td>Receiving</td>
<td>Video / HDBaseTTM</td>
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<td></td>
<td>transmission</td>
<td>Remote Power</td>
<td>transmission</td>
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<td>Link to app diagram</td>
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<td>HDMI-TPS-90 series extender</td>
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<td>HDMI-TPS-95 series extender</td>
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<td>HDMI-TPS-96 series extender</td>
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<td>HDMI-TPS-97 series extender</td>
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<td>Other TPS extender</td>
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<td>MMX TPS series (without PoE)</td>
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<td>MMX TPS series (with PoE)</td>
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<td>MX-TPS IB / OB</td>
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<td>MX-TPS2 IB / OB</td>
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<td>MX-TPS2 IB / OB -P</td>
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<td>25G TPS IO boards</td>
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<tr>
<td>Third party HDBaseTTM device</td>
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</tbody>
</table>

*Use with caution!*

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#### Legend

- ✓ compatible/available
- x none
- ✗ not allowed

*Use with caution with the third-party device, because the HDMI-TPS-96 series extenders always send 12V power via TPS port to other device.*
4. Powering Options

4.1. HDMI-TPS-95 series Powering Options

The HDMI-TPS-95 extenders can be powered by any of the following ways:

a) Local adaptor: 12V DC input for local power supply.
   Remote power option can be enabled or disabled with the jumper.

b) Remote power: The TPS extenders can be powered remotely by its extender pair or a TPS matrix board. This feature can be enabled or disabled with jumper settings.

4.2. HDMI-TPS-96 series Powering Options

The HDMI-TPS-96 extenders can be powered by any of the following ways:

a) Local adaptor: 12V DC input for local power supply.
   INFO: Both extenders can powered locally, while they are connected via CATx, the remote power will not cause any damage.

b) Remote power: The extender pair can power each other, when one of them is locally supplied with 12V DC adaptor. The extender always sends 12V remote power via TPS IN (on the receiver) or TPS OUT (on the transmitter) RJ45 connector to the other device.

4.3. HDMI-TPS-97 series Powering Options

TPS-97 extenders are compatible with IEEE 802.3af standard - Power over Ethernet (PoE) - and can receive power over the TPS line.

a) Local adaptor: 12V DC input for local power supply.

b) Remote power: Remotely by a PoE-compatible Power Sourcing Equipment (PSE) device, like Lightware’s power injector (TPS-PI-1P1) or a PoE-compatible matrix or matrix board.
5. Powering Examples

5.1. HDMI-TPS-95 Series Powering Examples

The HDMI-TPS-95 series extenders can be powered remotely by its extender pair or a TPS matrix board. This feature can be enabled or disabled with jumper settings. To enable the remote power function place the jumper block onto all the pinheads. To disable it place the jumper block onto the upper line pinheads only. In case of enabled remote power on both extenders the local adaptor can be placed at any side.

5.1.1. HDMI-TPS-95 Series - Standalone with Local Powering

INFO: When both extenders are powered locally, the jumper setting is irrelevant, they can be enabled or disabled, too, but the disabled setting is recommended.

5.1.2. HDMI-TPS-95 Series - Standalone with Remote Powering for TX

INFO: HDMI-TPS-TX96 also can be connected to the HDMI-TPS-RX95 without remote powering, if its jumper configuration is disabled.

5.1.3. HDMI-TPS-95 Series - Standalone with Remote Powering for RX

INFO: HDMI-TPS-TX96 also can power the HDMI-TPS-RX95 if its jumper configuration is enabled.

5.1.4. HDMI-TPS-95 Series - Connecting with HDMI-TPS-96 with Local Powering

INFO: HDMI-TPS-TX96 also can be connected to the HDMI-TPS-RX95 without remote powering, if its jumper configuration is disabled.

5.1.5. HDMI-TPS-95 Series - Connecting with HDMI-TPS-96 with Remote Powering
5.1.6. HDMI-TPS-95 Series - Integrated with Local Powering (MX-FR series)

INFO: The jumpers on the I/O boards of the MX-FR series can be individually configured for each port.

Compatible boards
- MX-TPS-IB
- MX-TPS-IB-A
- MX-TPS-IB-S
- MX-TPS-OB
- MX-TPS-OB-A
- MX-TPS-OB-S

Jumper Configuration of the MX-FR series
MX-TPS boards can be configured to remotely power the connected TPS-95 and TPS-96 extenders. To use remote powering you will need the followings:
- PSU-12VP external PSU
- Jumper pack

ATTENTION! Incorrect configuration can DAMAGE the devices! In this case the devices cannot be repaired under warranty.

5.1.7. HDMI-TPS-95 Series - Integrated with Remote Powering for RX and TX (MX-FR series)

INFO: The jumpers on the I/O boards of the MX-FR series can be individually configured for each port.

Compatible boards
- MX-TPS-IB
- MX-TPS-IB-A
- MX-TPS-IB-S
- MX-TPS-OB
- MX-TPS-OB-A
- MX-TPS-OB-S
5.2. HDMI-TPS-96 series Powering Examples

5.2.1. HDMI-TPS-96 Series - Standalone with Local Powering

5.2.2. HDMI-TPS-96 Series - Standalone with Remote Powering for TX

5.2.3. HDMI-TPS-96 Series - Standalone with Remote Powering for RX

5.2.4. HDMI-TPS-96 Series - Connecting with HDMI-TPS-95 with Local Powering

For more details see HDMI-TPS-95 Series - Connecting with HDMI-TPS-96 with Local Powering section.

5.2.5. HDMI-TPS-96 Series - Connecting with HDMI-TPS-95 with Remote Powering

For more details see HDMI-TPS-95 Series - Connecting with HDMI-TPS-96 with Remote Powering section.

5.2.6. HDMI-TPS-96 Series - Integrated with Local Powering (MX-FR series)

Compatible boards:
- MX-TPS-IB
- MX-TPS-IB-A
- MX-TPS-IB-S
- MX-TPS-OB
- MX-TPS-OB-A
- MX-TPS-OB-S
5.2.7. HDMI-TPS-96 Series - Integrated with Remote Powering for RX and TX (MX-FR series)

Compatible boards
- MX-TPS-IB
- MX-TPS-IB-A
- MX-TPS-IB-S
- MX-TPS-OB
- MX-TPS-OB-A
- MX-TPS-OB-S
5.3. HDMI-TPS-97 series Powering Examples

5.3.1. HDMI-TPS-97 Series - Standalone with Local Powering

5.3.2. HDMI-TPS-97 Series - Standalone with Remote Powering for TX

5.3.3. HDMI-TPS-97 Series - Standalone with Remote Powering for RX

5.3.4. HDMI-TPS-97 Series - Integrated with Local Powering (HDBaseT-compatible devices)

INFO: The remote powering is always available in HDBaseT-compatible extenders and matrix switchers if the TPS-Pi-1P1 power injector is inserted into the HDBaseT signal path (Video over TPS).
5.3.5. HDMI-TPS-97 Series - Integrated with Remote Powering for TX and RX (PoE and HDBaseT-compatible matrix switchers).

INFO: MMX8x4-HT420M is also can send PoE to the extenders.

5.3.6. HDMI-TPS-97 Series - Integrated with Local Powering

Compatible boards
- MX-4TPS2-4HDMI-IB-SP
- MX-4TPS2-4HDMI-IB-S
- MX-4TPS2-4HDMI-IB-P
- MX-4TPS2-4HDMI-IB-AP
- MX-4TPS2-4HDMI-IB-A
- MX-TPS2-IB-SP
- MX-TPS2-IB-P
- MX-TPS2-IB-AP

INFO: HDMI-TPS-TX97 also can be powered with TPS-PI-1P1, and HDMI-TPS-RX97 also can be powered via MX-FR series with PSU-48VP2-220.

Compatible boards
- MX-TPS2-OB-SP
- MX-TPS2-OB-P
- MX-TPS-OB-AP
- MX-TPS2-OB-AP
- MX-TPS2-OB-A
- MX-4TPS2-4HDMI-OB-SP
- MX-4TPS2-4HDMI-OB-S
- MX-4TPS2-4HDMI-OB-P
- MX-4TPS2-4HDMI-OB-AP
- MX-4TPS2-4HDMI-OB-A
- MX-4TPS2-4HDMI-OB-B
5.3.8. HDMI-TPS-97 Series - Integrated with Local Powering (25G)

Compatible boards
- 25G-8TPS2-IB
- 25G-8TPS2-P1-IB
- 25G-8TPS2-A2-IB
- 25G-8TPS2-A2P1-IB
- 25G-8TPS2-A3-IB
- 25G-8TPS2-A3P1-IB
- 25G-8TPS2-OB
- 25G-8TPS2-P1-OB
- 25G-8TPS2-A2-OB
- 25G-8TPS2-A2P1-OB
- 25G-8TPS2-A3-OB
- 25G-8TPS2-A3P1-OB

5.3.9. HDMI-TPS-97 Series - Integrated with Remote Powering (25G)

Compatible boards
- 25G-8TPS2-P1-IB
- 25G-8TPS2-A2P1-IB
- 25G-8TPS2-A3P1-IB
- 25G-8TPS2-P1-OB
- 25G-8TPS2-A2P1-OB
- 25G-8TPS2-A3P1-OB