advoli™

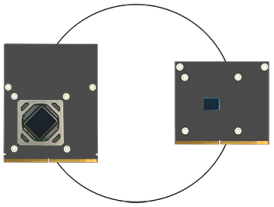
ADVOLI™ TB4 GRAPHICS CARD

PRODUCT SPECIFICATION

HDBaseT™ Certified Product

Modular

HDBaseT™ Certified Modular Graphics Card capable of using both Type A and Type B MXMs following the MXM spec 3.0 / 3.1



Emulated Controls

Graphics Card with Emulated CEC, RS232 and IR giving you the IOT power over your displays/projectors for remote access and control

Pass Through IR

Pass through IR via two 4-pin 3.5 mm phone jacks for IR in and IR out sending the IR signal up to a distance of 150 m per hop

Diagnostics

Built in cable diagnostics: cable distance, signal integrity for each twisted pair on the CAT cable and environmental diagnostics

4 x 4K over a distance of 70 meters

Using the power of HDBaseT™ one advoli™ TB4 graphics card can send four different 4K videos at a distance of 70 meters per hop

* Most likely, we haven't seen anything similar.

A MODULAR VIDEO CARD FOR LONG DISTANCES

The advoli™ TB4 is designed for audiovisual installations requiring long distances between server and displays/projectors for the following market segments:

KEY MARKETS

Education	**Corporate Enterprise**	**Hospitality & Retail**	**Healthcare**
Cultural & Event Centers	**Large Home Installations**	**Broadcast**	**Government**
House of Worship	**Aerospace & Defense**		

During the design process we wanted to ensure we designed something completely different to the existing market. Rather than competing in the vertical segment of processor speeds, we saw a large missing horizontal segment of functionality of graphics cards for audiovisual installations. We set out to develop a new type of graphics card with the following benefits:

KEY BENEFITS

Modular	Compatible with both Type A and Type B MXM 3.0/3.1 allow for higher customizability for audiovisual installations based on processor capacity and brand. For approved MXM modules please visit our website: advoli.com
4 independent channels	A single advoli™ TB4 graphics card to drive up to 4 displays walls, each playing unique 4K resolution video at a distance of 70 meters each. Pair our graphics card with extenders and each channel can run up to 8 display walls at 100 meters per hop in clone mode.
2 x RJ45 Ethernet Switch	2-port ethernet switch with the ability to extend ethernet across HDBaseT ports. HDBaseT ports have Ethernet fall back mode.
Half-length and dual width	Use the advoli™ TB4 graphics card in PCIe x16 slots in ITX form factor motherboards for miniaturized installations all the way up to server sized motherboards.
Emulated Controls	Emulate any IR, CEC and RS232 signal. Allow for remote access and control of displays and projectors removing the need for physical remote controls, which is especially useful for digital signage installations.
Pass Through IR	Where physical IR remote controls are a necessity the advoli™ TB4 graphics card can pass through the IR signal from the receiver side or the transmitter side.
Diagnostics	Packed with real-time diagnostic features from temperature, signal strength to cable tampering, remote monitoring of server and displays/projectors is possible. Ensure your audiovisual installation is performing optimal from an environmental, safety and security perspective. Paired with a cloud system, remote management and notifications are made possible.

Cooling Redundancy	We use a pure copper heatsink that has a better thermal performance than most other competing designs. Two dual ball bearing fans running at 70% speed. Should one break the other will increase its speed to 100% to compensate. By using dual ball bearing fans the life cycle increases. The combined result is a much lower operating temperature and a much longer life cycle.
No Electricians	Virtually anyone can pull, place, and terminate a CAT cable. Since we removed the need for dongles and power adapters, we have reduced the need of having an electrician come and install additional power outlets.
Device Reduction	If you use a HDBaseT™ certified transmitter and receiver with power adapters for six channels you have up to 54 points of failure between your media player and display. With our HDBaseT™ certified advoli™ TB4 graphics card combined with HDBaseT™ certified displays/projectors we can reduce this down to 6 points of failure. A lot less electronic waste, less points of failure, and potentially a lot less cost.
Plug and Play	No custom advoli™ drivers needed. Ensure you have the driver for the MXM, a free dual width PCIe x16 slot and a 6-pin 12V, free supplementary power cable and you are ready to go. All of our 'software' is built in as firmware.
Screen Order Preservation	We have built in screen order preservation in the firmware. Once you setup your displays, you can lock the EDID. By locking the EDID, you can unplug and re-plug any new display at any other resolution, and your previous locked EDID and resolution will continue to function unchanged. This prevents the operating system from destroying your screen order setup and is valuable for quick display swap during critical operations.
Enormous Resolution	Each channel is capable of independent 4K resolution, however all four 4K channels can be combined into one enormous resolution display e.g., 8K by 4K.

CAT CABLE BENEFITS

Easily Terminated at Installation	Most other competing audiovisual cables do not allow for termination of cable on site and need to be preordered at certain lengths. In addition, competing cables are limited in functionality. CAT cables do not have this limitation.
Cheaper & Abundant	CAT cables are extensively used in networking and have been the standard for decades. Therefore, CAT cables are much cheaper and easier to source than other audiovisual standards.
Long Distances	Most other competing audiovisual cables are limited in length of 3-15 meters for high-definition content. With shielded twisted pair CAT cables, we can go up to 150 meters per hop for HD content and still pack in all the additional wonderful features.
Fire-resistant & Shielded	It is important to be compliant with regulations and when a necessity, CAT cables are usually much easier and cheaper to find in fire-resistant and shielded material.

advoli™

TB4 GRAPHICS CARD

TECHNICAL DETAILS

KEY FEATURES

Modular	Works with Type A and Type B MXM 3.0/3.1 Modules*
4 Independent HDBaseT™ Channels	4 x UHD (4K) over 40 meters
Half-length	L: 167 mm, H: 106 mm, W: 39 mm to fit ITX form factor
Emulated Controls	IR, CEC, and RS232
Pass Through IR	IR in and out: 2 x 4-pin 3.5 mm phone jack
Diagnostics	HDBaseT™ and environmental diagnostics
Cooling Redundancy	Two dual ball bearing fans with pure copper heatsink

* Please refer to advoli™ website for updated list of compatible MXM Modules: www.advoli.com

CABLE LENGTH

Cable Type	Range	Supported Video
CAT5e/CAT6	60 meters	1080P, 60Hz, 36 bpp
CAT6a/CAT7	70 meters	1080P, 60 Hz, 24 bpp
CAT5e/CAT6	35 meters	4K2K, 30 Hz
CAT6a/CAT7	40 meters	4K2K, 30 Hz

CAT cables should be shielded twisted pair: CAT 5e / CAT 6 / CAT 6a / CAT 7

DIAGNOSTICS

Temperature Sensors	2 Sensors on Card + MXM GPU Temperature pass through
Firmware	Version, Date and Factory Reset
Operating Time	Operation Time of Power in SRAM and Flash, # Power Cycles
Electrical Readings	Main voltages vs optimal
HDBaseT™ Channel and Cable	Chipset Type, Link Status, Video Type, Clock, Cable length, Each twisted pair signal integrity and Error Rate

MXM MODULE(S) SUPPORTED

Model	**advoli™ TB4 Performance Light**	**advoli™ TB4 Standard**
AMD™	E9550™	E8860™
Architecture	Polaris™ (4th-Gen GCN)	GCN 1.0
Compute Units	36, 5.8 TFLOPS	10, 768 GFLOPS
Memory	8GB GDDR5, 256-bit	2GB GDDR5, 128-bit
Power	95W	37W
Graphics Clock	1120 MHz	575 MHz
Memory Clock	1250 MHz	1125 MHz
Video Encoder/Decode	Support for 4K hardware-accelerated (HEVC/H.265 and AVC/H.264)	

Will be further updated as we test and approve other MXM, please refer to advoli™ website: www.advoli.com

CONNECTORS

HDBaseT™	4 x RJ45: Female 8-pin Output
IR In Pass Through	4 pin 3.5 mm female plug connector
IR Out Pass Through	4 pin 3.5 mm female plug connector
USB Internal Header	10 PIN USB 2.0
Bus Type	PCI-Express 3.0 x16

POWER REQUIREMENT

Advoli™ TB4 Graphics Card	144 W max
Supplementary Power Connector	6-Pin (12V)

CONTROLS

EDID	Capture and display EDID: Raw or emulated
	Select virtual, locked, or Auto detect EDID
	Configurable Hotplug Detect (HPD)
Serial Console	Mounts with built in drivers in Windows™, Linux and Mac™ operating systems
	Can be opened and used directly by Terminal Program or Serial Port Application
	Accessible through browser/JavaScript/ActiveX™
	Serves as IOT interface to advoli™ TB4 graphics card
IR	Capture and display IR: Raw IR data commands
	Emulation of any RC5 or CIRC IR commands through Virtual COM port
CEC	Capture and interprets CEC commands
	Send raw command CEC strings emulating any device
	Auto responds to any basic CEC commands
	Diagnostics mode: Show full raw data and timing information

PORT INDICATOR LIGHT

No Light	No power, no video, no signal
No Green Light	No power
Blinking Green Light	Power being sent
No Blue Light	No signal being sent
Permanent Blue Light	Data signal sent
No Red Light	No video signal
Blinking Red Light	Video being sent

ENVIRONMENTAL

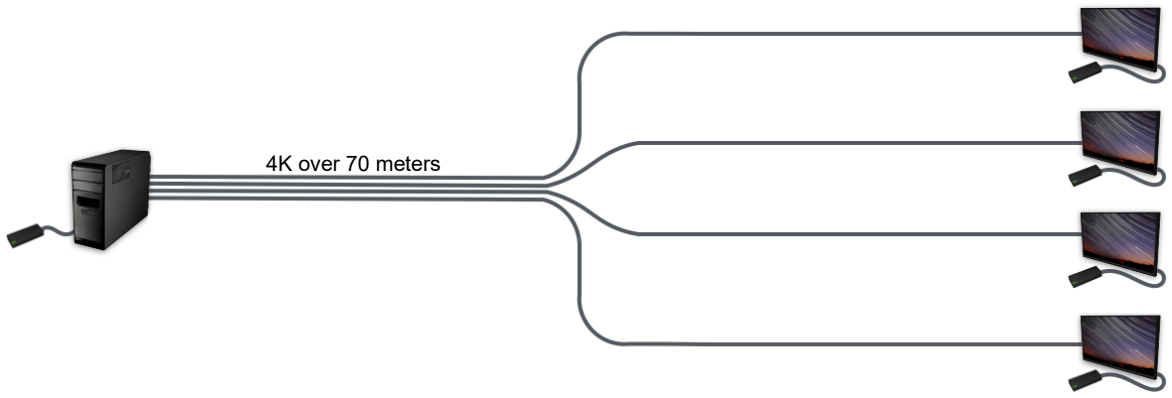
Ambient Operating Temperature	0-40 C
Ambient Operating Humidity	10% to 90% non-condensing
Storage Temperature - Non-Operating	0-60 C

REGULATORY COMPLIANCE

United States	FCC
Canada	IC
Europe	CE & WEEE
Japan	VCCI
Australia & New Zealand	C-Tick

For further details of regulatory compliance for our products please visit our website www.advoli.com

MAKE IT SIMPLE
…BUT POWERFUL



LEGAL

This document and its content is provided as is and only in connection with Advoli Limited (hereinafter referred to as “advoli™”) products. advoli™ do not take responsibilities with respect to the accuracy or completeness of the contents herein and reserves the right to change or discontinue products, technical specifications, descriptions, and documentation at any time without notice.

advoli™’s products are not designed or authorized to be used for life critical and/or death situations and/or in any other situation where the failure of advoli™’s product could create an event where bodily injury, death and/or severe property and environmental damage may occur.

No license of intellectual property rights is given to any party at any time by this document, unless expressly written in a formal agreement between parties of such rights being granted. advoli™ assumes no liability whatsoever and makes no warranty relating to its products, except what is set forth in advoli’s terms and conditions of sale.

Trademarks:

Advoli, advoli™ and advoli logo are trademarks of Advoli Limited.

HDBaseT is a trademark of HDBaseT Alliance a not-for-profit organization

AMD, Polaris and E9550 are trademarks of Advanced Micro Devices, Inc.

Mac is a trademark of Apple Inc.

Microsoft, Windows 8, Windows 10 are trademarks of the Microsoft Corporation

Any other registered trademark or trademark of any other company, organization or entity is exclusively used for informational purposes and advoli™ does not claim to own, be certified by, have licensed, or be endorsed by any such entity or trademark.

Intellectual Property Rights:

This product is protected by copyright and product is protected by multiple published and pending patents in multiple territories and/or countries around the world. The use of this copyrighted and patented technology without the written authorization of advoli™ is strictly prohibited. Reverse engineering or disassembly is strictly prohibited.

Disclaimer:

Although advoli™ has taken every precaution in preparing this document, Advoli Limited assumes no liability with respect to the operation of advoli™ software, hardware or any product or documentation described in this document. In no event shall advoli™ be liable for any incidental, special, punitive, consequential, or other damages whatsoever, including without limitations, interruption of service, loss or interruption of business, loss of expected profits, incidental or consequential damages in connection with the use of product, software and services referenced, regardless of whether provided by advoli™ or third party. The entire risk and consequences directly or indirectly arising from the use of this document, product, software, and services referenced herein, remains with the user.