ADH Technology Co. Ltd.

Datasheet

HDMI 1.4a Active Hybrid Cable

Document Revision History

Date Edited	Rev.	Author	Pages	Change Description

1. Purpose

This document validates solely for the product of ADH-Tech, HDMI 1.4a Active Hybrid Cable (AHC). This document provides basic information and electronic characteristics for customer reference only, and subjects to change without notice.

2. Description

ADH-Tech's HDMI 1.4a AHC has advanced optical fiber technology to extend the HDMI link length up to 150-m in maximum. Moreover, the ultra-low-power consumption feature enables the link without external electrical power plug required. With user-friendly advantages, just plug-and-play the cable can bring the high-definition video display easily. This cable can support HDMI maximum data rate up to 3.4-Gbps per lane with light weight, flexible, and ultra-small bending radius of only 57-mm via notable fiber technology. This HDMI Active Hybrid Cable can be widely deployed in home theater, convention center, outdoor advertising or broadcasting, and so on, for high-definition video display applications.

3. Feature

- **Up to 150m Maximum Cable Length**
    - o Custom Length Available upon Request
    - o Low Power Consumption: 250mW (max.)
        - o No External Power Required
- **HDMI Maximum 3.4Gbps/channel**
    - o Aggregate data rate 10.2Gbps
- **Plug and Play with Users Friendly**
    - o No Customer Setting Required
- **Hybrid optical cable with fiber and copper wire**
    - o Light Weight, Slim and Flexible Cable
- **Ultra-small Bending Radius**
    - o Minimum Bending Radius of 57mm

4. Applications

Home Theater	Security Systems
Conference Room	LED Sign Boards
Auditorium	Medical Imaging Equipment Display

Blue-ray, 3D video, Projector, Set-top box, DVR, Game Consoles and Computer

Panel Information Displays for Airports, Stadiums and Outdoor Advertising

5. Absolute Maximum Rating

Not necessarily applied together. Exceeding these values may cause permanent damage. Functional operation under these conditions is not implied.

Parameter	Symbol	Min.	Typical	Max.	Unit
Power Supply Voltage	Vcc	4.8	5.0	5.3	V
Operating Temperature	OT	0		50	°C
Storage Temperature	ST	-20		70	°C
Relative Humidity	RH	10		80	RH

6. Specifications

Item	Description
Supported Resolution & Distance	PC: WUXGA 1920 x 1200 up to 150 meters HDTV : 480p, 720p, 1080i and 1080p deep color, 4K2K, 3D Full HD 1920 x 1080 up to 150 meters
HDMI Level	HDMI high speed, Not Ethernet
DDC Communication (I^2C)	Fully support bi-directional EDID and HDCP (Ver. 1.1) communication[*1]
Optical Converter	4 channel 850 nm VCSEL and PIN-PD array
Connector Type	HDMI type A
Cable Type	Hybrid type with optical fiber and copper wire Optical fiber : 50/125 µm 4C ribbon multi-mode glass fiber (OM2 grade) Copper wire : (a). AWG 28 * 7c (b). AWG 28 * 5c and AWG 24 * 1c
Cable Diameter	5.7 × 3.6 mm ± 0.2 mm

Cable Type	LSZH
Minimum Cable Bending Radius	57 mm
Tensile Strength	200 N
Cable Length	15~150m (with 0~+100cm tolerance), custom length available upon request
Cable Weight	20 g/m
Cable Color	Black
Differential Input Impedance	100 ohm (typ.)
Differential Output Swing	300mV (typ.)
Current consumption	45 mA (max.) (from HDMI +5V)
Power Consumption	250mW (max.)
External Power Supply	No External Power Required
DDC pull-up resistors	Source side: 47K ohm Display side: 2K ohm

Notes:

1. DDC communication for EDID/HDCP, through I^2C, is highly recommended to adopt CMOS level logic, instead of TTL one. Contact ADH-TECH to provide appropriate supports once customer encounters screen with Black-Image or No-Voice situation by using this product.

7. Regulatory Compliance

Item	Standard
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022:2010 (Class B)
Electrostatics Discharge (ESD)	IEC 61000-4-2:2008 Criterion B
Radiated Immunity	IEC 61000-4-3:2006/A1:2007/A2:2010 Criterion A
RoHS compliance	2002/95/EC Amendment 4054 (2005/747/EC)

8. HDMI Connector Pin Assignment

Connector of this HDMI 1.4a AHC is fully compliant with HDMI Type-A standard with pin assignment shown in the below.

Tab. HDMI Connector Physical Layer Interface

Pin	Symbol	Definition
1	CH2+	TMDS Data Signal Channel 2 Positive
2	GND	TMDS Data Signal Channel 2 Shield
3	CH2-	TMDS Data Signal Channel 2 Negative
4	CH1+	TMDS Data Signal Channel 1 Positive
5	GND	TMDS Data Signal Channel 1 Shield
6	CH1-	TMDS Data Signal Channel 1 Negative
7	CH0+	TMDS Data Signal Channel 0 Positive
8	GND	TMDS Data Signal Channel 0 Shield
9	CH0-	TMDS Data Signal Channel 0 Negative
10	CLK+	TMDS Clock Channel Positive
11	GND	TMDS Clock Channel Shield
12	CLK-	TMDS Clock Channel Negative
13	CEC	Consumer Electronics Control
14	Utility	Not Used
15	SCL	I^2C-bus SCL
16	SDA	I^2C-bus SDA
17	GND	DDC/CEC Ground
18	+5V Power	+5V Power
19	HPD	Hot Plug Detect
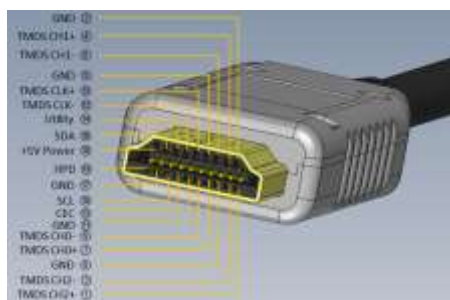
Fig. HDMI Type-A Connector

9. Physical Dimension

FRONT VIEW

SIDE VIEW

SECTION A-A

BACK VIEW   UNIT: mm
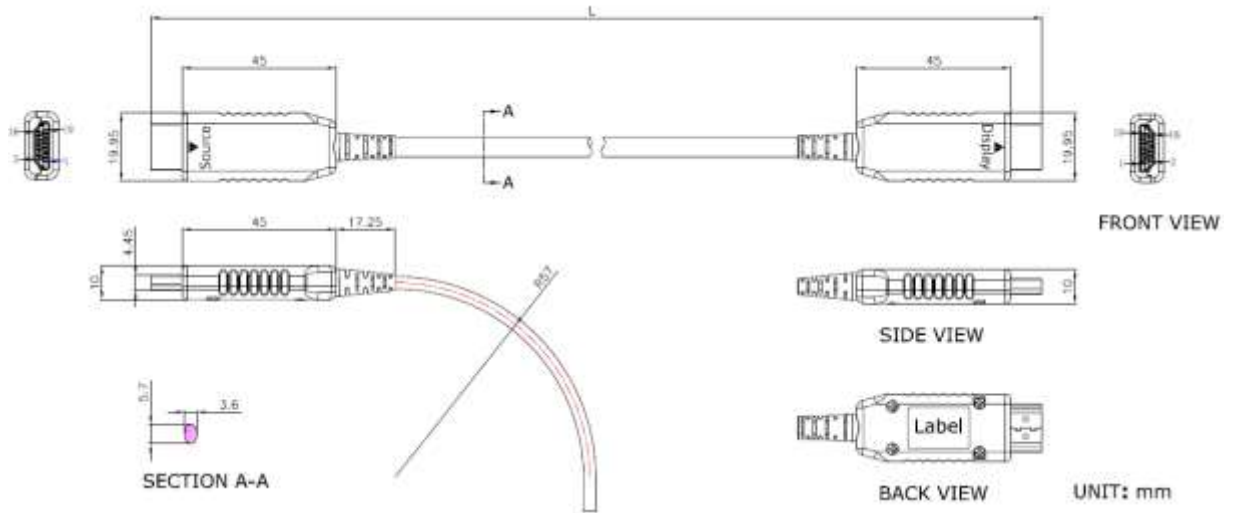
10. Handling

- Care should be taken to restrict exposure to the conditions defined in the Absolute Maximum Ratings.

- Put the product in an even and stable location. If the product falls down or drops, it may cause an injury or malfunction.
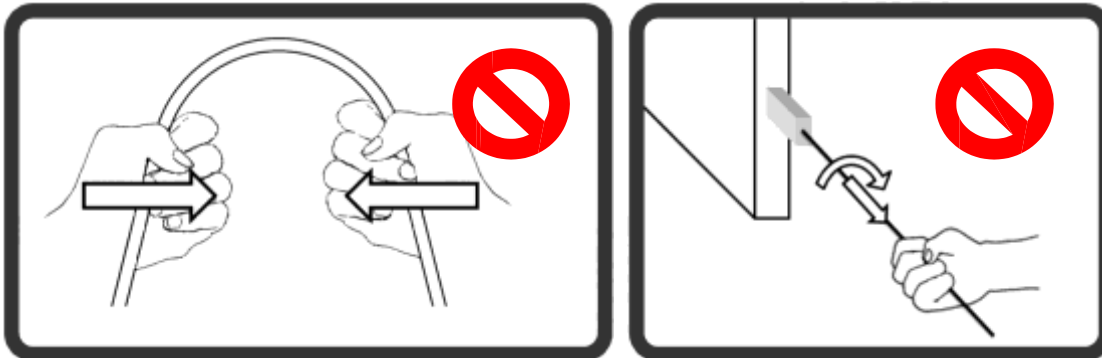
- The cable must not be subject to extremely bending during installation or while in operation. If you bend the cable at a radius less than the cable minimum bend radius, the cable may get permanently damaged. (referring left picture)

- Don't twist or pull by force ends of the cable. It may cause malfunction. (referring right picture)

11. Special Note

- To keep system working properly, always connect the cable **"Source"** end toward A/V source devices such as DVD player…etc. and always connect the cable **"Display"** end toward A/V sink devices such as TV…etc.

- This cable doesn't support HEAC (HDMI Ethernet and Audio Return Channel).

- This AHC has been verified according to ATC's HDMI compliance process. For the linkage of DVI interface with this cable, the signal compatibility is not verified and guaranteed. Customer may contact ADH-TECH for appropriate support if customer intends to deploy this AHC for DVI application.