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Advantages of HDBaseT vs HD SDI

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HDMI is often compared to HD-SDI for various Video Audio installations. However, fare comparisons have to be made between HDBaseT often used to deliver HDMI and HD-SDI.

Basic Comparison:

HDMI is developed on top of DVI that added Audio, CEC, ARC and Ethernet. HDCP is always optional with HDMI. You may or may not use HDCP with HDMI. HD-SDI never had HDCP option. HD-SDI uses high quality coaxial cable and lock in BNC connector while HDMI is basically designed around four shielded twisted pairs and seven extra wires. So HDCP should not be the issue in this comparison since HD-SDI does not offer HDCP. Interestingly HD-SDI has no upstream channel. The Source has no idea about the display or sink device. HDMI has many upstream channels: EDID reports about monitor prefer formats in Video and Audio, CEC allows bi-directional control channel, ARC allows send back digital Audio, Ethernet channel allows bi-directional 100 Mb/s Ethernet. HD-SDI does not offer any of these: EDID, CEC, ARC or Ethernet. HDMI uses special 19 pin connector and cable consisting of 4 twisted pairs plus 7 wires. HD-SDI uses one coaxial wire. So HD-SDI can be terminated in the field while HDMI cannot.

That is where HDBaseT comes in. You really have to compare HDBaseT to HD-SDI. HDBaseT is a very advanced technology using modification of 10GBaseT Ethernet technology. All HDMI features: Video, Audio, EDID, CEC, ARC or Ethernet are supported by HDBaseT and are sent through standard CAT5e or CAT6 twisted pair cable that could be terminated in the field with a RJ45 connector. HDBaseT adds additional signals to that single CAT5e/6 connection: bi-directional RS232 and IR both directions. The cost of a twisted pair cable and termination is always lower for CAT5e/6 + RJ45 than for a coaxial cable and BNC connector for HD-SDI.

Connectors:

HDBaseT uses regular RJ45 connectors with lock in. HD-SDI uses BNC connectors with lock in.

Cost:

HDBaseT regular CAT5e/6 cables and RJ45 connectors used for Ethernet connectivity are drastically cheaper than high quality high bandwidth Coax and high quality BNC connectors for HD-SDI.

Length:

The SDI for 480i resolution (Standard Definition) can run 230m. The HD-SDI for 1080p can run 100m. The 12G-UHD-SDI needed for 4K/60 is reported working only up to 70m. HDBaseT for 1080p can run 200m. HDBaseT for 4K/60 can run up to 110m. So as far as 1080p and 4K HDBaseT outruns both 3G-HD-SDI and 12G-UHD-SDI.

Scalability:

HDMI + HDBaseT can be used without any HDCP. It's fully scalable and support all VESA VGA formats.

Time Code:

HDMI and HDBaseT are not designed with provision of Time Code. However, HDMI has many audio multi-channel formats and control data stream links. I believe you can find lot of third party devices that insert audio into existing HDMI stream. I think if need arises such devices can insert regular audio on some audio channels and Time code on other audio channels that will be delivered on the other end through HDBaseT as well. Time code also can be inserted in IR, RS232 or Ethernet channel available in the HDBaseT.

Transmission Distance Charts:

Below is length chart approved by HDBaseT. The cables here are usual. If Key Digital KD-CAT6STP1X is used - you can add 20% in distance:

HDbaseT Class/Model	Resolution	Regular Mode Distance CAT5e/CAT6	Regular Mode Distance CAT6STP1X	Regular Mode Accuracy (bit per pixel)	Long Reach Mode Distance	Long Reach Mode Accuracy (bit per pixel)	Color subsampling
Class B CATHD250 CATHD400	4K/24/30	115 feet	130 feet	24 bit	N/A	N/A	4:4:4
	4K/60	115 feet	130 feet	24 bit	N/A	N/A	4:2:0
	1080p/60	200 feet	230 feet	36 bit	N/A	N/A	4:4:4
Class A HDBaseT 1.0 CATHD600	4K/24/30	230 feet	330 feet	24 bit	N/A	N/A	4:4:4
	4K/60	230 feet	330 feet	24 bit	N/A	N/A	4:2:0
	1080p/60	330 feet	330 feet	48 bit	500 feet	24 bit	4:4:4
Class A HDBaseT 2.0 CATHD800*	4K/24/30	330 feet	330 feet	24 bit	N/A	N/A	4:4:4
	4K/60	330 feet	330 feet	24 bit	N/A	N/A	4:2:0
	1080p/60	330 feet	330 feet	48 bit	500 feet	24 bit	4:4:4

Below is the table published by Belden cable (source) for best 3G-HD-SDI performance for 1080p/60.

Recommended Transmission Distance at Serial Digital Data Rates

Data Rate:	143 Mb/s		177 Mb/s		270 Mb/s		360 Mb/s		1.5 Gb/s		3.0 Gb/s	
Spec:	SMPTE 259M		ITU-R BT. 601		SMPTE 259M		SMPTE 259M		SMPTE 292M		SMPTE 424M	
Cable Part Number	Composite SD-SDI (NTSC)		Composite SD-SDI (PAL)		Component SD-SDI		Widescreen SD-SDI		HD-SDI		1080p/50-60 3G-SDI	
	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m
179DT	542	165	498	152	416	127	362	110	115	35	81	25
1865A*	686	209	627	191	517	158	446	136	134	41	90	27
1855P	986	301	904	276	746	227	640	195	190	58	125	38
1855A	1022	312	932	284	781	238	680	207	215	66	149	45
1505F	1173	358	1060	323	858	262	732	223	220	67	147	45
1506A***	1354	413	1243	379	1030	314	887	270	265	81	177	54
1694F	1460	445	1312	400	1066	325	916	279	280	85	189	58
1505A**	1440	439	1317	401	1105	337	958	292	304	93	210	64
1695A	1706	520	1566	477	1276	389	1104	337	322	98	211	64
1694WB****	1733	528	1597	487	1333	406	1161	354	363	111	249	76
1694A****	1791	546	1650	503	1371	418	1188	362	371	113	256	78
1694D	1791	546	1650	503	1371	418	1188	362	371	113	256	78
7732A	2575	785	2335	712	1929	588	1638	499	451	137	283	86
1794A	2276	694	2078	633	1746	532	1510	460	469	143	320	98
7732LL	2400	732	2202	671	1818	554	1580	482	515	157	354	108
7731A	2791	851	2613	796	2146	654	1871	570	580	177	393	120

Conclusion:

HDBaseT with HDMI is proven to be commercial and residential video segment connectivity leader with millions of installs. In recent 3 to 4 years ALL manufacturers and ALL installations are deploying HDBaseT as a standard of choice for Digital Video, Audio, EDID, CEC, ARC or Ethernet connectivity with unmatched price and quality.