

New Product Announcement: Toslink Optical Cables

The audio frontier is all abuzz these days with the pleasure possible through HDMI, USB, FireWire® and Ethernet connections. However, these current generation digital technologies are only part of the story, just as the challenge of designing, manufacturing and choosing the best analog interconnects and speaker cables is as important as ever. The S/P-DIF (Sony® Philips Digital InterFace), which arrived in 1983 along with the CD, is still very much a part of our world today. S/P-DIF is transmitted through Digital Coax and Toslink fiber optics (EIA-J), making them still some of the most important cables in electronic entertainment.

While, thanks to HDMI, Toslink is not so often used to connect a DVD player to an A/V receiver, Toslink connectors are common on cable-boxes, TV sets, subwoofers, all sorts of products. And now, the 3.5mm Mini Optical connector, also somewhat incorrectly known as Mini-Toslink, is everywhere ... from the 3.5mm dual-purpose headphone jack on a Mac laptop, to inputs on some of the finest portables.

For these many reasons, AudioQuest has refined and renewed our line of serious high-performance OptiLink cables. All models and all lengths are now available Toslink ↔ Toslink and Toslink ↔ 3.5mm Mini Optical.

When the question is "how can a fiber-optic cable change the sound?" ... the answer is easier to explain than for almost any other type of cable. If the light source were a coherent laser, firing into a vacuum, all the light would stay straight, arriving at its destination at the same time. Even if the LED light source in a Toslink system were coherent, the light entering a fiber-optic cable is scattered and dispersed by imperfections and impurities in the fiber. This can be measured as a loss of amplitude ... but amplitude is not the problem, a 50% true loss would have no effect on sound quality.

The problem is that the dispersed light does get through the cable, but only after it has taken a longer path, like a pool ball bouncing off the side-rails, causing it to arrive later. This delayed part of the signal prevents the computer charged with decoding this information from being able to decode properly, or even at all. The inability to decode shows first at higher frequencies (not audio frequencies, this is a mono stream of digital audio information), so reduced bandwidth is a measurable signature of light being dispersed by a fiber. The punch line: The less dispersion in the fiber, the less distortion in the final analog audio signal presented to our ears.

There is another serious dispersal mechanism in the Toslink system. The fiber is a relatively huge 1.0mm in diameter, and the LED light source is also relatively large, spraying light into the fiber at many different angles. Even if the fiber were absolutely perfect, the signal would be spread across time because light rays entering at different angles take different paths and arrives with different amounts of delay.

The almost complete solution to this problem is to use hundreds of much smaller fibers in a 1.0mm bundle. Because each fiber is limited as to what angle of input can enter the fiber, there is far less variety, and far less dispersion over time. This narrow-aperture-effect is similar to how a pin-hole camera can take a picture without a lens ... by letting in light at only a very limited range of angles, a picture can be taken, whereas removing the lens from a wider aperture would make photography impossible. Less light gets through a multi-fiber cable, but the light that does get into the fibers comes out within in a much smaller time-envelope.

So there is one problem, the dispersion of light across time ... and two avenues towards a better result: less dispersion in the fiber (better polymers and ultimately quartz), and less dispersion by filtering the input angle. How simple is that! Listen and enjoy.



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Forest

- Low-Dispersion Fiber
- Low-Jitter (Digital Timing Errors)
- Precision Polished Fiber Ends

Length	Retail Price	Toslink		Mini-Toslink	
		Part #	UPC	Part #	UPC
0.75m / 2'6"	\$25	OPTFOR0.75	0 92592 05153 9	OPTFOR0.75M	0 92592 05153 9
1.5m / 5'0"	\$29	OPTFOR01.5	0 92592 04545 3	OPTFOR01.5M	0 92592 03578 2
3.0m / 10'0"	\$45	OPTFOR03	0 92592 05154 6	OPTFOR03M	0 92592 03584 3
5.0m / 16'5"	\$69	OPTFOR05	0 92592 05155 3	OPTFOR05M	0 92592 03586 7
8.0m / 26'3"	\$99	OPTFOR08	0 92592 05157 7	OPTFOR08M	0 92592 04164 6
12.0m / 39'5"	\$149	OPTFOR12	0 92592 05158 4	OPTFOR12M	0 92592 04233 9
16.0m / 52'6"	\$199	OPTFOR16	0 92592 05159 1	OPTFOR16M	0 92592 05150 8



Cinnamon

- **Lower-Dispersion Higher-Purity Fiber**
- Low-Jitter (Digital Timing Errors)
- Precision Polished Fiber Ends

Length	Retail Price	Toslink		Mini-Toslink	
		Part #	UPC	Part #	UPC
0.75m / 2'6"	\$65	OPTCIN0.75	0 92592 05140 9	OPTCIN0.75M	0 92592 05151 5
1.5m / 5'0"	\$79	OPTCIN01.5	0 92592 04548 4	OPTCIN01.5M	0 92592 05152 2
3.0m / 10'0"	\$109	OPTCIN03	0 92592 05141 6	OPTCIN03M	0 92592 05454 7
5.0m / 16'5"	\$159	OPTCIN05	0 92592 05142 3	OPTCIN05M	0 92592 05455 4
8.0m / 26'3"	\$239	OPTCIN08	0 92592 05143 0	OPTCIN08M	0 92592 05456 1
12.0m / 39'5"	\$349	OPTCIN12	0 92592 05144 7	OPTCIN12M	0 92592 06426 3
16.0m / 52'6"	\$459	OPTCIN16	0 92592 05145 4	OPTCIN16M	0 92592 06427 0



Vodka

- **217 Narrow-Aperture Synthetic Fibers**
- Low-Jitter (Digital Timing Errors)
- Precision Polished Fiber Ends

Length	Retail Price	Toslink		Mini-Toslink	
		Part #	UPC	Part #	UPC
0.75m / 2'6"	\$169	OPTVOD0.75	0 92592 05161 4	OPTVOD0.75M	0 92592 06428 7
1.5m / 5'0"	\$229	OPTVOD01.5	0 92592 05163 8	OPTVOD01.5M	0 92592 06429 4
3.0m / 10'0"	\$349	OPTVOD03	0 92592 05212 3	OPTVOD03M	0 92592 06430 0
5.0m / 16'5"	\$499	OPTVOD05	0 92592 05400 4	OPTVOD05M	0 92592 06431 7



Diamond

- **280 Narrow-Aperture Quartz (Fused-Silica) Fibers**
- Low-Jitter (Digital Timing Errors)
- Precision Polished Fiber Ends

Length	Retail Price	Toslink		Mini-Toslink	
		Part #	UPC	Part #	UPC
0.75m / 2'6"	\$489	OPTDIA0.75	0 92592 05146 1	OPTDIA0.75M	0 92592 06432 4
1.5m / 5'0"	\$559	OPTDIA01.5	0 92592 05147 8	OPTDIA01.5M	0 92592 06433 1
3.0m / 10'0"	\$789	OPTDIA03	0 92592 05148 5	OPTDIA03M	0 92592 06434 8
5.0m / 16'5"	\$1,089	OPTDIA05	0 92592 05149 2	OPTDIA05M	0 92592 06435 5