



AV Fiber Technology Trends in 2010

In 1980, a fiber optic research engineer at Harris Corporation in Melbourne, FL designed the industry's first wavelength locker. This is an optical device used for stabilizing or locking a laser's wavelength to a specific value so that multiple lasers could be transmitted down a single fiber without interference. At the time, it seemed inconceivable that anyone would want or need to send more than one wavelength down one lone fiber. After all, singlemode fiber had not yet been developed and the various signal multiplexing techniques provided the capability to send thousands of individual signals over a single wavelength – surely this technology would be adequate. Never in the world of fiber optics has there been a more short-sighted vision of the capabilities and future of fiber optics. The telecommunications market seized upon this wavelength stabilization technology and, with the development of singlemode fiber and the advent of the optical amplifier, the rest, as they say, is history.

Over the past several years, the AV market has taken advantage of these and other innovative telecom technologies and provided products and system architectures that give this industry many more choices for transmitting and routing high bandwidth signals such as HDSDI, DVI, HDMI, RGBHV and more recently Display Port. Both the broadcast and AV markets have borrowed well-proven, successful technologies from the telecom market including Small Form Pluggable (SFP) optical transceivers for high speed switches and optical transmitters & receivers, CWDM (Course Wavelength Division Multiplexing) and even select DWDM (Dense Wavelength Division Multiplexing) devices – using that previously mentioned, albeit a more advanced etalon-based wavelength locker. On the passive side, optical splitters, switches, add/drop devices, and others are starting to become accepted in the AV markets.

There will always be new products to transmit the latest type of audio and video signal and use fiber to go further and faster. Fiber will be used simply as the mechanism for getting these signals from one point to another. These I would consider to be expected, evolutionary changes. For the AV market, a more revolutionary change will be coming to fruition in 2010. Some of the more innovative or revolutionary advances in fiber for this market will be centered more on the transport of these signals, not merely the conversion of these signals from electrical to optical and back again. As the industry becomes more familiar and comfortable with fiber, newer (at least for the AV market) system transport technologies and architectures will start to be used including those utilizing all-optical switches & splitters, wavelength add/drop devices, photonic multi-casting, optical amplifiers, fiber protection, among others. Right now it is commonplace to transmit multiple video, audio and data signals over one fiber using either one or multiple wavelengths. These new transport technologies will allow us to selectively route various signals and wavelengths as the demands for this growing AV market dictate. It is these fiber optic products and system architectures that will have a major effect on changing the face of the AV world in years to come.

AV serves as a technology bridge between the high-end broadcast and the more traditional, conservative security market. It is inevitable that these fiber system elements will form that bridge between these markets. Never again will the capabilities and vision of what advancements fiber will bring in the future be overlooked.

If you have any questions or if you have any particular topic on fiber optics you would like to know more about, please send an email to me at emiskovic@meridian-tech.com.

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