



United States: 800.578.1853  
 Canada: 855.569.3240  
 Quebec: 888.222.3321  
 Maritimes: 888.224.3450

## Video Installation Tips

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### Introduction to HD CCTV (HD-SDI)

The closed circuit TV (CCTV) industry has undergone dramatic changes over the past few years thanks to the introduction of megapixel digital cameras capable of delivering extremely high resolution via network. The rise of the IP based video system has created a new demand and expectation among end users for a much higher quality product in terms of both video display and recording. But shifting to a network based solution has also meant that end users have had to invest heavily in both training and rewiring in order to take advantage of the new technology. Many people have been led to believe that it's simply a matter of connecting IP cameras to the existing network and installing video management software. In practice this has been far from the truth. According to a 2012 IPVM survey 76% of system integrators install a dedicated network for IP video. For many end users the wholesale shift to an IP based system is both daunting and expensive. But now there is a the third option for closed circuit video: True HD CCTV using HD-SDI transmission technology.



#### What is HD-SDI?

HD-SDI is a technology that transmits HD images digitally through a coaxial cable without compression. In technical terms, HD-SDI (High-Definition Serial Digital Interface) is a collection of specifications developed by Society of Motion Picture and Television Engineers (SMPTE) for application in high definition broadcast television studios. Although HD-SDI has been in use and proven in TV studios worldwide since the late 1990's, it was not available to the CCTV industry until 2009 when SMPTE licensed the technology for Digital HD surveillance as the HDcctv Standard. Although manufacturers have been developing and testing HD-SDI equipment since that time, it is only recently that these products have reached the mainstream CCTV market.

System Comparison	Transmission Type		
	HD CCTV (HD-SDI)	Analog CCTV	IP Camera
Network Access	DVR or Server	DVR or Server	NVR or Router
Network Dependent	No	No	Yes
Install System with Existing Coax	Yes	Yes	No
Latency (Transmission time delay - video or data)	Near Zero	Near Zero	Yes - Due to network packet type transmission
Digital imaging	Uncompressed	No	Compressed
Provides 720P or 1080P Video	Uncompressed	No	Compressed
Provides Real Time (30FPS) HDTV	Uncompressed	No	No
Maximum Transmission Range (Single Cable)	500 Ft/150m (RG59 Coax)	1000 Ft/300m (RG59 Coax)	330 Ft/100m(CAT5) Max transmission distance between switches/hubs)



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### What are the advantages of HD-SDI?

1. HD-SDI cameras deliver the highest quality HD live views. Since no compression is required for transmission and there is no IP LAN in between the camera and a monitor on the local site, HD-SDI cameras provide true HD live views.
2. HD-SDI cameras and DVR's are as easy as regular analog CCTV cameras and DVRs to install and set up.
3. HD-SDI cameras and DVRs can normally be installed using existing cabling.

### Transmission Distance

An uncompressed HD signal is more than six times larger than its analog equivalent. As such transmission distances were limited with the first generation of HD-SDI and this restricted the application of the technology for the CCTV market. However the second generation equipment now available has overcome those shortcomings. In analog CCTV systems transmission over RG59 coaxial cable is a maximum of 1,000 feet. With HD-SDI, transmission over RG59 averages about 500 feet. But HD repeaters can easily be installed to increase the HD transmission range to that of analog CCTV.

### Conclusion

The ability to achieve true HD quality video without a network carries huge implications for end users. Companies that have invested heavily in wiring their facilities for analog CCTV can usually move up to HD without rewiring. Some upgrading may be needed but this will be far less expensive than installing a totally new network infrastructure. Perhaps more important is the fact that the transition is virtually seamless since an HD-SDI CCTV system operates in exactly the same way as the analog system it replaces. The need to invest in VMS (video management software) and the learning curve that goes with it is eliminated.

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