



Split your video signal to multiple monitors

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If you want to connect multiple monitors to one audio/video signal source, you need to use specialized equipment – Video Splitters. In this article we will introduce some of the features and applications of these devices using examples from the extensive professional A/V solution line of ATEN International.

The processes of information distribution, obtaining, storing and processing are of special importance in people's everyday lives. With the development of multimedia technologies, the computer-based information systems enabling the prompt creation, refreshing, and distribution of all types of media content, including text, voice messages, images and video, are being used in ever increasing applications. Nowadays, such systems may be found in shopping malls, cafes and bars, educational institutions, in the waiting rooms of airports and railway stations, and more.

During the process of developing such information systems, the main objective is finding a solution to meet the need to transmit video (and sometimes an audio signal too) from one source to several, or even tens of other devices (display boards, screen projection units), that may be located at a considerably long distance. Of course, a separate PC could be connected to the local network and installed near each monitor. But such a solution would require huge costs in both equipment purchase and for system maintenance during operation.

Fortunately, a more simple and affordable specialized device exists. – Video Splitters allow

you to transmit a video signal from one source to (PC, media player, etc.) to different display units (monitors, projectors, TV sets, etc.).

All video splitter models produced can be classified by some of their key properties. One of them is the number of output ports (2, 4, 8 or 16 ports, for example). One device may be connected to the each port. So, number of the ports is equal to number of devices which may be simultaneously connected to the video splitter (Fig. 1).



Fig. 1. Diagram of equipment connection via a four-port video splitter.

To provide existing systems with the possibility of scaling, the production of up-to-date video splitters allows for a cascade (up to three levels) connection of such devices (Fig. 2). Such systems make it possible to connect up to tens or even hundreds of image output devices. For example, a two-level cascade connection of four-port video splitters will permit 16 display devices, and a three-level one, up to 64 devices.







Fig. 2. Diagram of video splitters cascading.

One more important feature of video splitters is the type of video interface. The computer interfaces VGA or DVI, analogue non-composite video with RCA plugs or HDMI (which provides not only video signal transmission, but also the audio signal in a digital format), may be used to connect video signal source and input device. The choice of interface is determined by the same equipment design philosophy used for the initial information system creation.

Some video splitter models are provided for a possibility to distribute not only video, but an audio signal also. A 3.5 millimeter mini-jack connector, or a pair of RCA connecters, may be used to connect stereophonic analog audio signals. In the models designed to be connected on HDMI, transmission of video and audio signals in the digital form is carried out through the same interface.

Key Features of the VanCryst Line Video Splitters

Model	Number of output ports	Max. number of connected displays by cascading	Video interface	Possibility of audio signal switching	Max. distance to monitor, m	Video signal max. resolution
VS92A	2	8	VGA	no	65	1920×1440 (60Hz)
VS94A	4	64				
VS98A	8	512				
VS132A	2	8	VGA	no	65	2048x1536 (60Hz)
VS134A	4	64				
VS138A	8	512				
VS0116	16	4096	VGA	available	65	1920x1440 (60Hz)
VS162	2	8	DVI	available	5	1920x1200 (60Hz)
VS164	4	64				
VS182	2	8	HDMI	available	20	1920×1200 (1080p)
VS184	4	64				
VS0108H	8	512	HDMI	available	20	1920x1200 (1080p)
VS1504	4	384	VGA	available	450	1920x1200 (60 Hz) up to 30m; 1600x1200 (60 Hz) up to 150m; 1280x1024 (60 Hz) up to 200m
VS1508	8	3072				

ATEN International provides a wide range of different video splitter models, that comprise part of their line of VanCryst professional AV-solutions. Main features of some models are presented in the table. In addition to video splitters, the VanCryst product line also includes other devices which are necessary to construct media content distribution system (media distribution system, MDS):

- Video Switches enable you to select one of multiple video signal sources;
- Video Matrix Switches which allow for switching between any of the multiple available video signal sources to one of the several connected displays;





- Video Converters allow you to connect signal sources to the devices equipped with other types of video interface (for example, a laptop with a VGA video output to a monitor with DVI input etc.);
- Video Extenders provide for video signal transmission through a twisted pair over the distances sufficiently exceeding maximum permissible cable length of video interfaces (VGA, DVI, HDMI and other).

A variety of equipment presented in the VanCryst product line permits the creation of media content distribution systems for a wide range of different projects – from the simplest ones to the very complicated. In addition to audio and video signal transmission from one source to multiple display units, there is a possibility of choosing one of the several video signal sources, and transmission of the signal to remote devices over a distance up to 450 m and more.

Let's look at some examples. The application of a two-port video splitter to connect two devices to one computer is the simplest and the most commonly-used solution. To provide video images on a big screen, the operator's monitor and screen projection unit needs to be connected to the computer installed in the study room. For this purpose, the two-port video splitter is connected to the PC video adapter outlet. The monitor is connected to one of its ports, and the projector is connected to other port – (Fig. 3). An additional

advantage of such a solution is that the video splitter is equipped with a built-in video amplifier. This facilitates the installation of a projector at a considerable distance from the system unit --VGA-cable lengths up to 65 m may be used. In retail showrooms which specialize in computer and household electronic appliances, you can see the rows of stands with working monitors or TV sets. Instead of a separate system unit connection to each monitor, it is much more convenient to use only one signal source and a video splitter.



Fig. 3. Diagram of monitor and projector connection to PC through a two-port video splitter.

Similarly, information displays with flight timetables and messages for passengers are installed at airports, railway stations etc. Recently, information monitors are increasingly being used in shopping malls to display information about products and existing sale promotions, commercial films showing, and more.







Airport

Another application for video splitters is in sport cafes and bars. Even if a projector and big screen are available in the main bar area, it is difficult to provide equally comfortable viewing for all visitors at once. Therefore, such facilities are usually equipped with multiple plasma or LCD monitors connected to PC, satellite receiver or media player through the video splitter.



Sport Cafe

And finally, an example of a more complex solution is shown in Fig. 4. This is a scheme of the media content distribution system of a multi- storey shopping mall. The ATEN VS1508 and VS1504 video splitters, ATEN VB552 video signal repeaters, control distribution panel, multiple input sources (PC), as well as video display devices (monitors) are used in this scheme. This solution allows you to broadcast media content from a central source to all available monitors. In addition, a separate signal can be sent to each group of displays. It should be noted that video signal transmission between video splitters and repeaters is carried out through a twisted pair (UTP category 5).



Fig. 4. Diagram of the media content distribution system of the multi-storey Shopping Center.





This enables audio and video signals transmission over a distance up to 450 meters and it is of no small importance, taking into account the size of such a facility as a multi-storey shopping mall. Use of twisted-pair makes installation of the system easy, and the application of RJ45 connectors provides quick and easy switching.

So, ATEN video splitters in the VanCryst product line in combination with other products can successfully meet the challenge of creating multimedia information systems of varying complexity - from a monitor and a projector connection to one PC to multi-storey shopping mall installations. Due to the variety of models produced, the optimal solution can be easily found practically for any project. In addition, all devices may be connected in a cascade which allows for the scaling of any existing media content distribution system with minimal costs.



Fig. 5. Video Splitter ATEN VS1508 & VS1504



Fig. 6. VGA Over Cat 5 Repeate+Audio ATEN VB552





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