

HOW TO ADD CONTROL RELAYS TO HD VIDEO

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The new analog HD-Video cameras referred to as AHD, TVI, and CVI are being installed in greater quantities because they can provide the needed High Definition picture and they can use the existing coaxial cable when replacing older analog cameras. These HD-Video cameras share signal attributes with the older cameras that allow for hidden signals to be transmitted along with the picture in both directions on the coaxial cable.

Some of these hidden signals were used to control pan, tilt, zoom features on camera or to send contact/relay control signals to open gates, ring bells, or send contact switch signals for alarms. The control could go in either direction on the coaxial cable by inserting special signals into the (VI) Vertical Interval portion of the video wave form, and then at the other end of the coaxial cable those signals could be detected and used to control things. Once the signal is inserted onto the video signal it can be detected anywhere the video signal on coaxial cable goes. It will even go over wireless video systems as long as the control is going in the same direction as the video signal.

So why use the Vertical Interval when you could just run wires? Well, if your wire run is short and you have the direct access to run the wires then that makes good sense. However, if the cost of running the wires (digging trenches, breaking into walls, or busting out concrete) or the time to install is excessive then using the video signal to send the control signals is a good idea.

The Vertical Interval part of the video waveform is the part that occurs between the end of the picture frame and the beginning of the next frame, interlaced and progressive video both use a Vertical Interval waveform. If you have ever seen a video image roll, that black bar you see is the Vertical Interval. That black bar is a series of video lines that are mostly all black and it is in this area that control signals can be inserted.

Over 23 different variations of HD-Video waveforms have been developed so far and the Vertical Interval is different for each one of them, however they can all be used to send control signals in one or both directions.

The trick to running control in both directions and sending more than one control signal on the video is to use different VI lines for each signal so the equipment you use should have provisions to change the lines used to send the signals. Also, because there are many different types of HD-Video the equipment should have provisions to select the type of video being used so you can use any camera type. The ATU-2HD/ARU-2HD Relay Transmitter and Receiver has all of the features needed to give you relay control on your HD Video installation.



These products transmit and receive relay control contact closures encoded on any video signal such as AHD, HD-TVI, HD-CVI, PAL, and NTSC Video over cable, twisted pair wire, or wireless system. You can send your relay control signals anywhere a video signal is being used, including optical laser transmission and wireless transmission of video. Relay control signals will be carried over any distance that the video signal can go. Control and tele-metering relay contact closures are encoded onto the video signal by the ATU-2HD unit and decoded in the ARU-2HD unit with relay outputs.

Each ATU-2HD/ARU-2HD will send two contact control relay signals in the vertical interval of the video without interfering with the picture. The units are field programmable to insert the signal on 8 lines in the vertical interval so up to 4 systems can be used on the same video signal by selecting different lines for each system. Up to 4 systems can be used to provide a maximum of 8 control relays. The video format is field programmable for HD-TVI, HD-CVI, AHD, PAL and NTSC or CVBS video with the 8 position DIP switch. To program the units, use the lookup table in the instruction manual and set the DIP switches on the transmitter and receiver units to match the video you are using. Both transmitter and receiver should have the same switch settings.

One channel of the ATU-2HD / ARU-2HD can be used as a system alarm that will operate upon loss of power to either terminal, loss of the video signal or loss of transmission path, a cable cut, or wireless failure. The unit has a video loop through so in the event of power failure, the video through-put is not interrupted. Contact closures to the ATU-2HD input will be repeated as contact relay closures at the ARU-2HD output.

The system is housed in an ABS enclosure that has a UL flame rating of 94-VO and is powered by 12 Volt AC or DC power transformers (12 Volt DC power cubes are supplied with the units). The current draw is low allowing the units to be connected to the same power supply as the camera. Both the transmitter and the receiver have power/video on LED indicators for easy set-up and the ARU-2HD has two LEDs to monitor the relay outputs.