

# HOW TO MAKE MAXIMUM USE OF YOUR VIDEO SIGNAL

## A GUIDE TO VIDEO CONTACT CONTROL AND TELEMETRY

It seems that everywhere you look today, there is a video signal being used for one reason or another. These signals are transported around using several methods. Some are RF (Radio Frequency), some are Digital Compressed Data streams, but most of them are Base-Band video signals.

A Base-Band video signal is the type of signal that usually comes out of your VCR or camcorder on the RCA connector. In professional equipment the connector of choice is the female BNC connector.

The most well know and used video standard in the USA and Canada is the NTSC (National Television Standards Committee) color television video standard. This standard was adopted by every TV broadcaster and video equipment manufacturer in these two countries and elsewhere to bring color television to the marketplace while still allowing the use of Black and White video. The NTSC Base-Band video signal is very robust and widely used.

To discuss video let's start with the unit of measure, the I.R.E. unit. I.R.E. stands for Institute of Radio Engineers, this regulating body set the standards of measure for the video industry. This standard has been adopted by all industries in the United States and other parts of the world. 140 I.R.E. units is equal to 1 Volt Peak to Peak. I.R.E. units are easier to use because they divide into a video signal evenly.

Certain parts of the video signal allow command and control signals to be inserted onto the video in a way that does not conflict with the picture information.

The Vertical Interval (V.I.) is the part of the video signal that tells the monitor to start drawing a new screen. It is made up of special SYNCHRONIZATION pulses with no picture elements. The standard levels for these SYNC pulses are 40 I.R.E. units. All video SYNC pulses should be 40 I.R.E. units.

The Vertical Interval is a very useful place to put command and control signals. You can also use the VI to bring information back up the video line, this is referred to as telemetry or tele-metering.

The V.I. has 20 lines or places for your information. These lines are called lines 10 through line 20, even and odd fields. This means there are two fields with ten lines each in them. You can put a great deal of information on those 20 lines. What ever you put in the V.I. will stay there over any analog transmission system and will even be recorded when the video is recorded. When you play back the video your information will still be on the V.I. lines and can be read back at any time.

So what can you do with your V.I.? Most broadcasters use the V.I. to send signals to verify the transmission quality of their video signal, or control such things as AD insertion or program switching.

It can also be used to send signals along with the video to control anything that can be controlled by a switch. Like turn on the air conditioning unit in the transmitter shack, or control the shut down of a low power transmitter. Or maybe control a program switch to route a video signal by remote control. The uses for contact command and control are only limited by your imagination.

You can also use the V.I. to report back information from a remote site. You can insert telemetry signals at a transmitter site and recover them anywhere the TV signal can be received. This will give you vital feedback information from any remote transmitter site.

CCTV Closed Circuit Television cameras also have the very same V.I. so this technology can be used to control gates, lights, remote fence motion detectors and much more. Since the contact closure information travels with the video, there is no need to run contact wires along with the video cable.

This is especially useful when adding motion control or door control after the cabling has been done, when it is more difficult to go back and pull more wires. You can just use the same video cable for all the contacts and the video picture too.

The equipment that makes command control, and telemetry possible is called ATU-8 (Alarm Transmitter Unit) and ARU-8 (Alarm Receiver Unit). One unit goes at each end of the video path. If you close a contact on the ATU-8, a relay on the ARU-8 will close. The contacts on the receiver mirror the operation of the contacts you supply to the ATU-8. Each ATU-8 is capable of sending eight separate control contacts per unit. If a power failure should occur the units will pass the video signal through.

If a smaller number of contacts are required the ATU-2 and ARU-2 unit has two contacts for command, control and telemetry.