

# **SUPERVISORY CONTROL ON DIGITAL TV**

The age of digital broadcasting is here, and with it comes a new set of problems and solutions. Before the digital revolution many broadcasters used the Vertical Interval of the analog NTSC video signal for "Supervisory Control" to transmit information used to control equipment and monitor the broadcast signal. Those days are gone, because the new TV signals are digitally compressed and do not have a Vertical Interval to insert this useful information into.

Thankfully there is still a way to get contact and control information through the compressed digital TV signal path. Since it is no longer possible to use the video path to transmit control information, the audio path must be used. The HD "High Definition" and SD "Standard Definition" digital signals provide for 16 channels of embedded audio, that allows for eight pairs of audio channels that may be used as needed. The SD signal uses the SMPTE 272M standard for encapsulation, and the HD signal uses the SMPTE 299M standard. You can use any of your un-used audio channels to transmit control information.

One of the common audio systems in use with program audio is the Dolby 5.1 format that has five 20KHz wide channels and one "LFE" Low Frequency Effects channel with 3Hz to 120Hz response. If any of the 20KHz channels are not being used it is possible to use them for transmission of your contact control signals. It is also possible to use the front center channel that handles mostly mono voice track since the left and right front channels also carry much of that information redundantly.

Even if all of the audio channels you have are being used for program you can still transmit your control information. It is possible to use a small portion of the high frequency audio bandwidth that will pass through the 20KHz digital compression system, those frequencies that are above the hearing range of most listeners. In this way you trade off some of the high frequency response on one channel for a way of monitoring and controlling your system. This is a reasonable trade off, and if you select the front center channel of a 5.1 system the reduction of audio bandwidth will probably not be noticed because the programming on that channel is mostly mono speech dialog, it has a frequency response that rarely goes above 12KHz in frequency content.

FM SYSTEMS, INC. has developed the SCT-8 Supervisory Control Transmitter and SCR-8 Supervisory Control Receiver to accomplish this task. With this equipment you can get your control and monitoring job done using the existing audio transmission path in your system. Simply feed the audio into the SCT-8 prior to digital encoding and recover the audio at the other end of the system and feed it into the SCR-8. When you close a contact at the SCT-8 a relay will close at the SCR-8.

When audio is applied to the SCT-8 a small portion of the audio spectrum around 19KHz is cleared to make way for a carrier. That carrier is inserted onto the audio at a level -45dB below the audio level. Since the carrier is at 19KHz it will not be audible for most listeners. The carrier level is injected at -45dB to create minimal loading of the audio level on your system. After the signal is received by the SCR-8 the carrier signal is then removed from the audio content.

In this way you can control equipment at the transmitter site over the STL or monitor conditions at the site. The ability to transmit contact controls to the transmitter site or anywhere you need to have them will help you to maintain control of your system. Can you think of a place in your system that you could use remote contact control? If so this equipment will do the trick.



Call 1-800-235-6960, order a set and bring back your remote control.

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