VIDEO LOSS DETECTION IN THE DIGITAL AGE

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Video loss detection and alternate source switching has been with us since the early days of video broadcast. For the broadcaster it was important to know that the signal was always going out to viewers intact, and watching the TV signal for loss 24 hours a day just wasn't an option. So broadcasters used devices to watch the signal electronically and sometimes automatically switch to an alternate signal when the primary signal failed. Signal integrity was also important to the advertiser, their income was directly tied to delivery of the broadcast signal and they would not pay for an ad that didn't run.

The analog video system developed by the Broadcast Television Standards Commission (BTSC) makes it easy to monitor for loss of video. The most common method for measuring loss of video is by detecting the Sync Pulse portion of the video signal. The Sync Pulse comes at 15734Hz regular intervals and it is a very well defined signal. Most loss detectors made for analog video use circuits called Sync detectors. These detectors take in base-band video and put out a series of pulses that are used to detect the loss of Sync.

Video loss by Sync detection does not look at the luminance (white) picture level or any picture content to determine loss of video, this prevents false alarms caused by fade to black or fade to any color and still picture video.

With the advent of new digital video systems this old reliable way of detecting video loss by Sync detection has been abandoned. The old Sync detectors will not work on the new digital video equipment because this new equipment has Sync generators in them and if the input video ceases the units will now put out a Sync Pulse train and even the last picture frame repeated over and over again called a "Freeze Frame". This simulates the original video Sync Pulse and will fool the older Sync detectors into thinking the video is still active. Now a new way of detecting video loss is needed.

Any NTSC video signal that is transmitted using digital equipment must now use the active picture element to determine loss of video. You can take the point of view that if a video image does not change for a period of time it is probably not working. The question is how long do you wait for change in the picture to occur?

Many programs will put up a message or phone number or simply hold the last scene as a still for a number of seconds, thank goodness usually not more than about 20 seconds or so. Knowing this you can detect the picture change and time out beyond the longest still period of the video. If the detector instantly detects the loss of video Sync and monitors the picture image for "Freeze Frame" events you can video loss monitor any video that is being processed by digital equipment.

FM SYSTEMS, INC. in Santa Ana CA. has developed a system to replace the old video Sync detection systems it is called the VFD471 Video Freeze Frame detector. It will handle video that has been processed or transmitted by digital equipment.

The VFD471 Video Freeze Frame Detector is a video switch and alarm that provides an automatic transfer of video and stereo audio when there is a Freeze Frame interruption of video service. Freeze Frame interruptions can occur due to loss of signal in a digital transmission system, or loss of signal on an IRD Integrated Receiver Decoder.

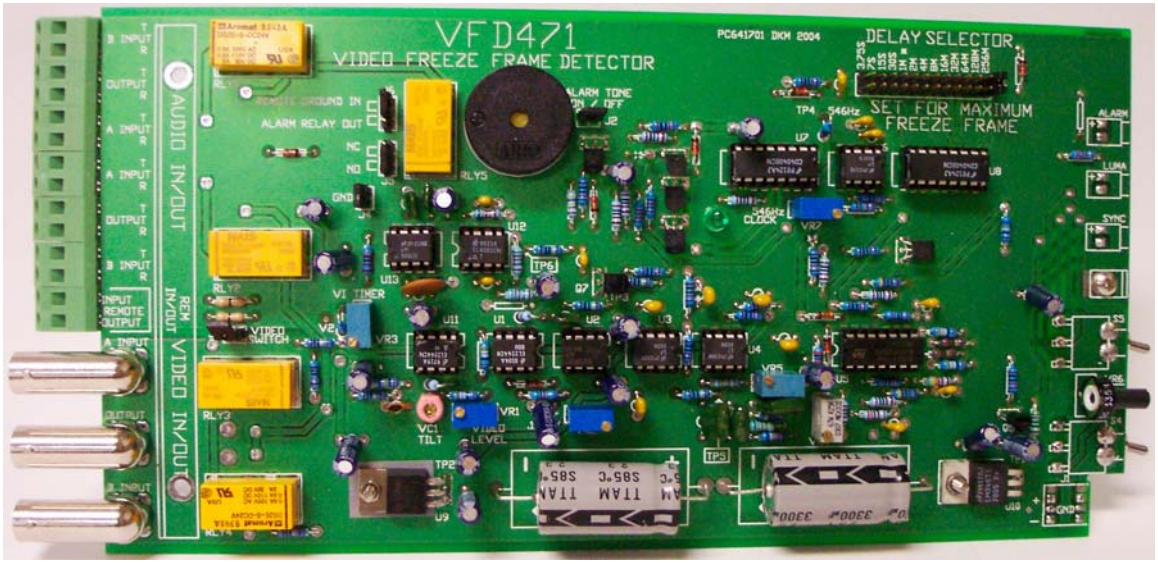
The control circuitry constantly monitors the incoming video picture content at the primary input. When a Freeze Frame interruption of video occurs the device automatically switches to the secondary input. This feature controls a relay that can also be used to activate an external alarm or operate other equipment. The unit will work equally well with NTSC or PAL video signals.

Field Select time delay allows normal video to pause for a short period of time without causing an alarm condition. This delay is user programmable from 3 seconds to 256 minutes. A front panel toggle switch allows for three alarm reset conditions. The AUTO reset position will switch back to the primary input after normal video is restored. This gives the operator trouble free unattended switching of video preventing "DEAD-AIR" occurrences. The HOLD reset position will stay connected to the secondary input until the reset switch is depressed manually, this is useful for unattended fault detection. The MANUAL reset position keeps the unit in reset, turning off the alarm while you resolve the Freeze Frame problem, this also switches the unit to the primary input.

The unit features a three position locking toggle switch to manually select either Primary, Secondary, or the Automatic mode of switching from the front panel. If power is lost the unit will stay connected to the primary channel.

Two green LED front panel indicators monitor the presence of video Sync and Luminance levels on the primary video input. A red LED indicates when a Freeze Frame time out alarm has occurred.

Video connections are BNC female and are automatically terminated with 75 Ohms to maintain the correct video levels. The balanced audio is connected by a 12 position screw terminal block.



The VFD471 card fits into the RMS400 **R**ack **M**ount **S**ystem, which is a 19" X 5 1/4" built-in power supply and Mainframe for use in a standard 19" rack. This rack mount will hold up to nine VFD471 cards. This lets you put nine independent video freeze frame switchers in three vertical rack spaces.