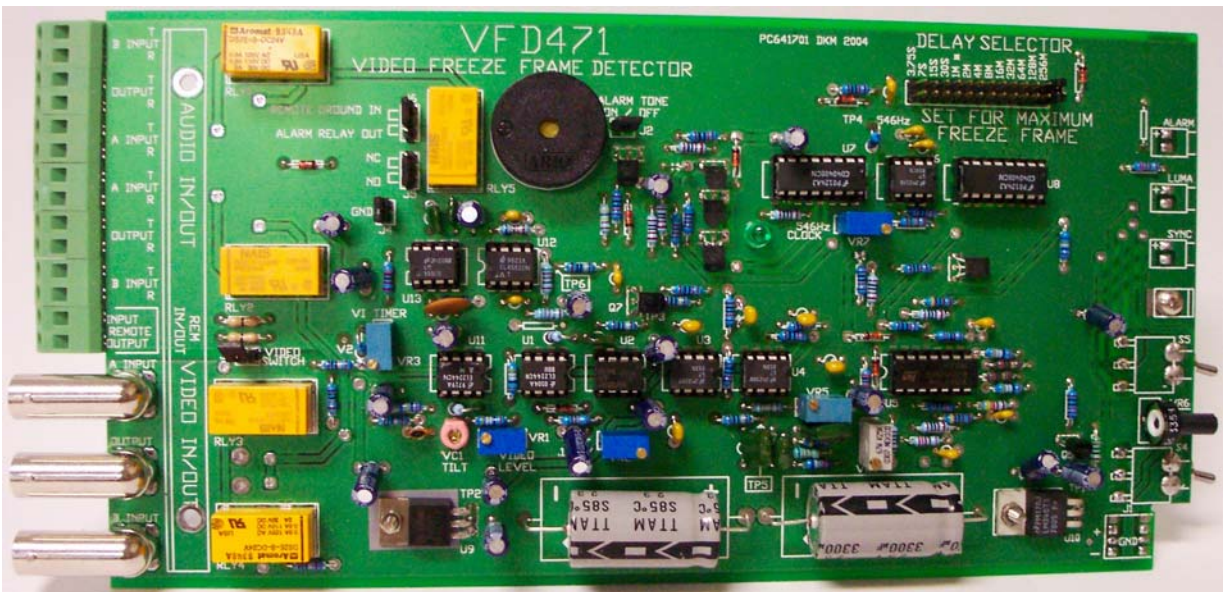


# VFD471

## VIDEO FREEZE FRAME DETECTOR



INSTRUCTION BOOK  
IB641701

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## DESCRIPTION

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, loss of signal on an IRD Integrated Receiver Decoder and many other video sources.

The control circuitry constantly monitors the incoming video picture content at the primary input (A). When a Freeze Frame interruption of video occurs the device automatically switches to the secondary input (B). 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. The delay is used when the video displays a still scene for a few seconds. This delay is user programmable from 3.75 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 (A) after normal video is restored. This gives the operator trouble free unattended switching of video preventing "DEAD-AIR" occurrences. The "HOLD" reset position will keep the video connected to the secondary input (B) 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 solve the Freeze Frame problem, this also switches the unit to the primary input (A).

The video connections are BNC female. All inputs are automatically terminated with 75 Ohms to maintain the correct video levels. ALL OUTPUTS MUST BE TERMINATED WITH 75 OHMS FOR PROPER OPERATION. The balanced audio is connected by a 12 position screw terminal block.

## FEATURES

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

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

## SELECT JUMPER AND CONTROL FUNCTIONS

Before PC Card installation you may select the desired control functions. A jumper is on when the two gold pins on the PC Board are shorted together with the shorting jumper. A jumper is off when it is placed on only one pin to hold it into place and keep it on the board.

- J2 When the ALARM TONE jumper is on an alarm tone will be heard to alert the operator that a freeze frame has occurred and the timer has reached alarm. If the jumper is removed the alarm will not sound.
- J3 If this jumper is removed the internal video A/B switch will be disabled. If the jumper is ON the video A/B switch will be active.
- J4 This jumper is used to ground one of the REMOTE output connectors when a switched ground contact is needed.
- J5 This jumper selects "NO" Normally Open or "NC" Normally Closed relay contacts for the REMOTE alarm connector.
- J6 The REMOTE CONTROL jumper selects the Rear REMOTE INPUT/OUTPUT connector as an input or an output function. If the jumper is in the ALARM RELAY OUT position the Remote connectors will be used as a relay contact output. The Normally Open or Normally Closed condition of the relay can be selected by the NC NO (J5) jumper. If the REMOTE CONTROL jumper is in the REMOTE GROUND IN position then the Remote connectors become an input control to force the video relay to the "B" position when the connector is grounded.
- J7 Used to select the time delay after a freeze frame in seconds (S) and Minutes (M) before the alarm and switching occurs. The normal setting is 1 Minute.
- VR6 The sensitivity of the freeze frame detection system can be adjusted from the front panel using the "SENSITIVITY" control. CLOCK-WISE is high sensitivity for very clean video (no noise) and COUNTER-CLOCKWISE is Low sensitivity for high noise video. To set this control input blank video or still frame video and adjust the front control until the alarm fails to reset automatically. This will be the optimum setting for that video quality.

### NOTE:

Select front control Switches S4 to "HOLD" and S5 to "A" for installation to insure that the switch will slide easily through the front panel.

## CARD INSTALLATION

The VFD471 Card fits into the RMS400 Rack Mount System, which is a 19" X 5 1/4" slide-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 Video Freeze Frame switchers or any other 400 series product into three RU spaces.

Remove the equipment from the packing materials. If unit needs to be mounted in the RMS400 follow these steps.

1. Please read the instruction book completely before starting.
2. Select one of the un-used nine positions to be occupied by the new circuit board module.
3. Remove the blank label in that position by peeling it off of the front panel. Peel the label slowly to remove all of the label and adhesive. Any remaining adhesive may be removed by rubbing the surface with your thumb. **WARNING DO NOT USE SOLVENTS TO REMOVE THE LABEL ADHESIVE.** The solvent could damage the equipment cards or cause a fire.
4. Peel the backing off of the new label and apply it to the front panel of the RMS-400 rack in the position of the new card. Align the new label with the screw head in the hole in the lower right hand corner of the label, then align the center thumbscrew with the clearance hole in the front panel. This should cause the label to be straight and vertical. When the label is in place press firmly the secure the label.
5. Then remove the thumb-screw retainer from the product card, it is located at the front of the card and is removed by rotating the knob counter-clock-wise.
6. Select any and all product options on the specific card, (See Instructions for individual product).
7. Next slide the card into the card guides at the rear of the RMS-400. Be sure that the notch in the circuit card is facing forward and down. Push the card all the way to the front of the rack until it stops. **DO NOT APPLY EXCESSIVE FORCE TO THE CARD.**
8. Insert the thumb-screw that was removed in step 5 while rotating it in a clock-wise direction. When it begins to thread into the card, continue until it is finger tight. **CAUTION TIGHT BY HAND ONLY, DO NOT USE TOOLS TO TIGHTEN THE THUMB-SCREW. OVER TIGHTENING WILL DAMAGE THE CIRCUIT CARD.**

9. Attach any video and audio cables to the appropriate connectors at the rear of the unit. See next section.

Most circuit board modules have several adjustments which are carefully factory set with precision instruments for optimum performance. Change only those which must be adjusted, some controls when mis-adjusted produce little change under normal operating conditions, but can seriously reduce the ability of the unit to function correctly under other conditions which may be encountered. Therefore, if you must adjust a control, place a mark on it before moving it, so that it may be returned to its original setting with reasonable accuracy.

### **SET-UP AND INSTALLATION**

Locate a convenient place in your rack and mount the unit. Next attach the Primary video signal to the input BNC connector labeled (A INPUT). Then attach the Secondary video signal to the BNC connector labeled (B INPUT). The BNC connector labeled (COM OUTPUT) is the output of the video switch. The video that is selected either manually or automatically will appear at this connector.

### **FRONT PANEL SWITCH OPERATION**

The switch near the middle of the unit marked "SWITCH" is a manual/automatic selector for the video switch. When the switch is in the "A" position, the video switch will stay in the "A" mode. When the switch is in the "B" position, the video switch will stay in the "B" mode. If the switch is left in the "AUTO" position, the video switch will automatically switch from the "A" mode to the "B" mode when a freeze frame that exceeds the time out occurs on the "A" channel. In the AUTO mode the "COM" output will return to the "A" channel when the video on "A" channel returns.

The switch near the bottom of the unit marked "RESET" is a manual/hold/auto, reset selector. When the switch is in the "MANUAL" position, the unit will be held in reset and no alarm will occur, this position is also used momentarily to clear any alarm condition. An alarm condition will operate the video switch if you have selected that option with S5.

When the switch is in the "HOLD" position, if an alarm occurs the alarm will stay on until the unit is manually reset. This is useful in finding intermittent alarm conditions. This will also cause the video to switch to the "B" channel and stay there until the unit is manually reset.

If the switch is set to the "AUTO" position, the alarm condition will be automatically reset when normal video returns to the "A" channel input.

The video switch will also switch back to "A" channel if you have selected that option on S5. NORMAL OPERATION WILL HAVE BOTH SWITCHES UP IN THE "AUTO" MODE.

### **FRONT PANEL INDICATORS**

A Red LED indicator signals the alarm on status. It will glow red when an alarm has occurred.

A Green LED marked "LUMA" indicates that Luminance video "white level" is above 40% on the A video input. When Luminance is below 40% the LED will be off.

A Green LED marked "SYNC" indicates the presence of video synchronizing pulses on the A video input. When no video is input on the A channel the LED will be off.

### **AUDIO/ALARM SWITCHING**

The unit is equipped with a set of relays that are used to switch stereo audio with the video. These contacts can alternately be used as alarm contacts to operate other equipment when a freeze frame occurs. The contacts are accessible from the rear panel through a 12 position screw terminal connector. There are two "C FORM" relays available for audio switching or for use as alarm contacts. They are marked "LEFT INPUT, RIGHT INPUT, T for TIP, and R for RING". The output is marked "OUTPUT". The output is the common for A and B inputs TIP and RING respectively.

If an alarm only output is desired the video switching portion of the unit can be turned off. Simply select no video switching by removing the jumper jack J3, then only the audio/alarm contacts will operate when a freeze frame occurs. If both audio and external switching is desired then remove J4 "GND" and select "NO" or "NC" for Normally Open or Normally Closed contacts and the REMOTE terminals will output the selected relay contacts.

### **REMOTE SWITCHING FEATURE**

The "REMOTE INPUT/OUTPUT" connector on the rear panel is for REMOTE SWITCHING. If a ground is applied to the REMOTE connector marked "INPUT" and the toggle switch on the front panel marked "SWITCH" is in the "AUTO" position, the unit will switch to "B" channel and stay there until the ground is removed. This feature allows the operator to remotely switch to an alternate channel if so desired. For the remote feature to be enabled, the center switch on the front panel must be in the "AUTO" position. If an external ground is not available then you can program the REMOTE terminal to be a ground by engaging J4.

**MAINTENANCE**

There are no field adjustments or calibrations required with the VFD471.

**If you have any questions regarding FM SYSTEMS, INC. products, please contact our engineering department at 800-235-6960 or fax your questions to 714-979-0913, we will call you back immediately.**