DCQ-2000

Digital Color

Quad Processor

Operation Manual

15/02/2002

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Features

True Digital Color Video Quad
- **CCIR-601 Digital Standard NTSC/PAL**

True Real Time (60 ips Quad image update rate)
VCR Input and Output with Playback
High Quality Interpolated 2X Zoom
Alarming Inputs per Camera
- **NO or NC Programmable**

Alarm Output Relay
- **NO & NC Contacts with Common**

Audible Buzzer Alarm
99 Alarm Event Log Memory
Independent Picture Controls for each Camera
- **Brightness**
- **Contrast**
- **Tint**
- **Color**

12VDC Power Input
Compact Metal Case
Video Loss Detection
6 Character Camera Title
Time & Date On Screen
Multi Format Date
24 Hr Time Format
Internal Clock backup in case of power outages
Non Volatile Memory for Program Setups
On-Screen Programming

Introduction

Congratulations on purchasing the DCQ-2000 Digital Color Quad Processor. This advanced unit accepts composite video signals and coverts them to the Digital CCIR-601 Video standard internally and does all the processing digitally. This allows true real time quad image update rate at 60 Hz for each camera input.

Due to the advanced digital processing, an interpolated 2X zoom mode that finally allows a quality zoom image to be seen full screen from a VCR playback is possible. Each camera input can individually be adjusted for brightness, contrast, tint and color to compensate for poor lighting or poor camera performance.

The On-Screen programming allows for easy user configuration of the all setups including programming the Time and Date. Each camera can have an individual title or label to identify it upon viewing the monitor or playback. With the built in Time/Date generator the DCQ-2000 can work with standard VCRs that do not include this feature.

There are separate VCR input and output connectors so playback can be done through the quad itself. Upon video loss the DCQ-2000 will sound a buzzer and output an alarm condition.

The DB-9 connector has hardwire inputs for alarm contacts for each camera. Upon alarm this camera can go full screen and the alarm output set to trigger other devices like your VCR.

This compact 12VDC product can be used in any battery powered application or mobile enviroment.

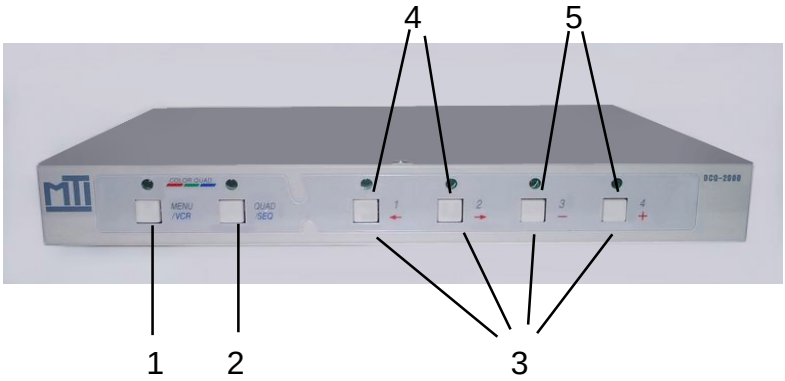
The DCQ-2000 will serve all your applications for a color quad from a basic system to advanced alarming and playback functions.

Important Safeguards

1. Read manual thoroughly before setup or operation of this product.
2. Save this booklet for further reference.
3. Follow the instructions and heed all warning notices
4. Do not use liquid or aerosol cleaners on this product, use a slightly damp cloth only. Do this only with the unit unplugged from the power source.
5. Do not use accessories not recommended by your dealer or installer with this unit.
6. Keep unit in a dry location. Dampness or moisture will be damage the internal components.
7. Do not block ventilation openings on unit.
8. Never insert any objects into unit, this could result in fire or electric shock. Never spill any liquid onto or into the unit.
9. If an outdoor cable is connected to this unit, be sure the cable is grounded well.
10. For added protection of this unit during a lightning or electrical storm, or when it is left unused for a long period of time, unplug it from the wall outlet and disconnect all cables.

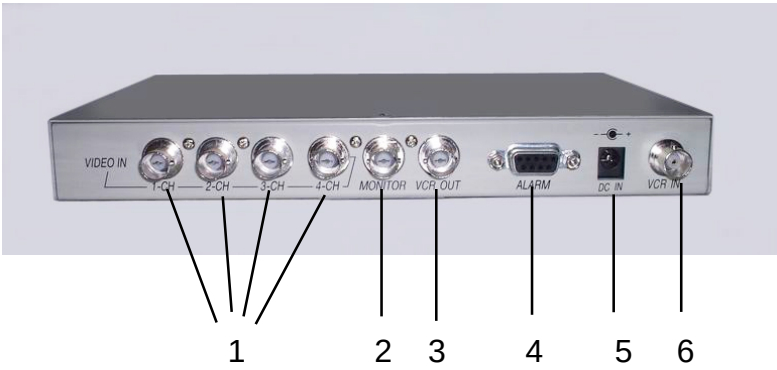
Warning: Cover removal should only be performed by qualified service personnel. This unit contains no user serviceable parts.

Front Panel



1 Setup Menu/VCR Mode
2 Quad Mode/Sequential
3 Camera Select
4 Select Item (in menu)
5 Change Status (in menu)

Rear Panel



1 Video In (1-4)
2 Monitor Out
3 VCR Input (Playback In)
4 Alarm Port
5 Power In (12VDC)
6 VCR Output (Record Out)

Installation

1. Place the unit on a flat, stable surface. Avoid locations that are subject to direct sunlight, excessive heat, moisture, or dust.

2. Connect the BNC cables from the cameras to the respective Video In ports. Each camera input is terminated with 75 ohms and require 1 V P-P video signal for proper operation.

3. Connect the Quad “VCR In” to the VCR “VCR Out” connector. Connet the Quad “VCR Out” to the VCR “VCR In” connector.

Note: The Quad “VCR Out” sends the picture to the VCR that is to be recorded. When the Quad is in the VCR Playback mode the Quad “VCR In” accepts the output of the VCR to be playbacked back or zoom on the Quad. However when the Quad is in this playback mode it does not send the Quad picture out to the VCR. In other words the Quad is a Simplex unit, it can either display the Quad image or do Playback from a VCR but can not do both at the same time.

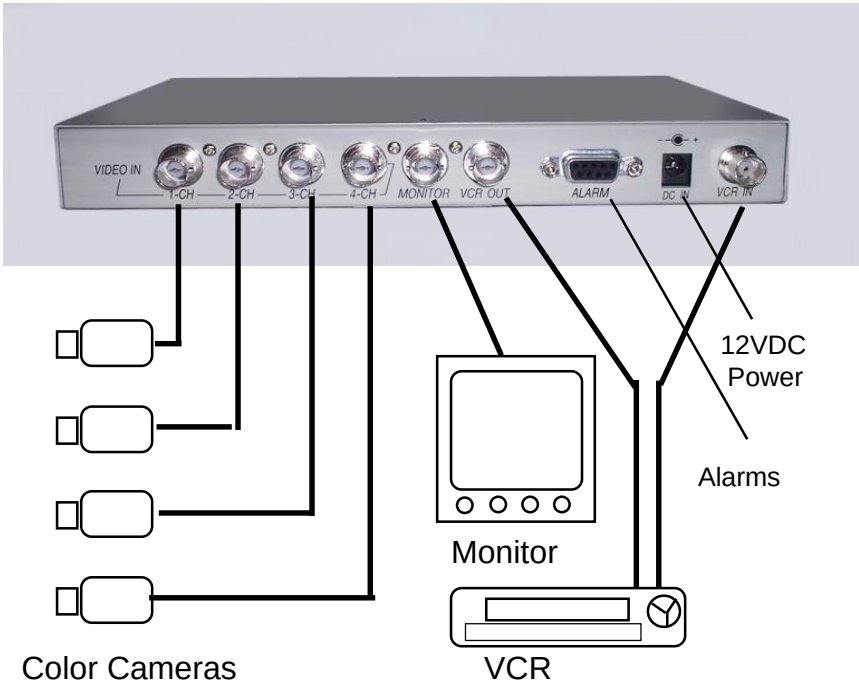
4. Connect the “Monitor Out” to the Video In of the monitor or A/V connectors on your TV.

5. Connect the Alarm outputs of other equipment to the respective pins on the DB-9 (Female) connector on the rear of the unit. Pin Out of this connector is described in Page 12.

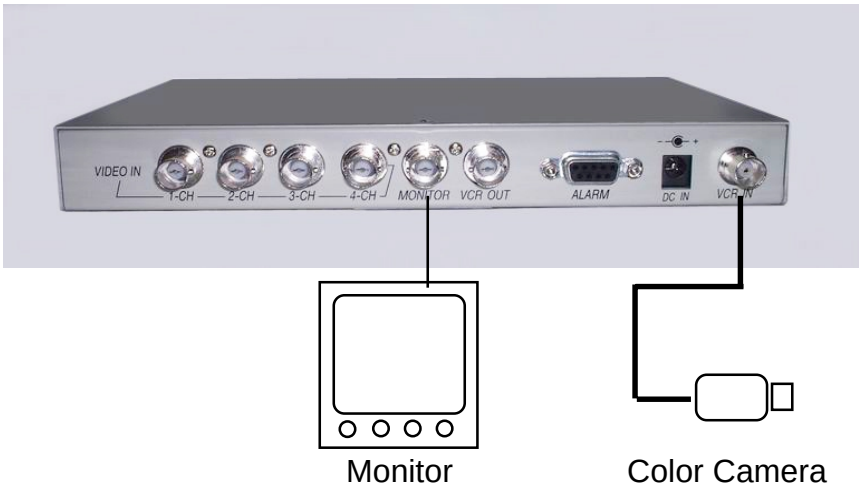
6. Connect the Alarm output of the Quad to other equipment like alarm panel or VCR

7. After you complete all the connections, plug the 12VDC connector to the unit and plug the adapter to the mains power.

Typical Installation



Live Zoom Mode



Operating Procedure

Upon powering up your quad the unit will sequence between all the cameras and the quad display automatically. The VCR will always record the quad image no matter what the picture is on the monitor display except in the VCR Playback mode.

Quad Mode
Press the “Quad Key” once and the monitor will display only the Quad image. Press this key again and the full screen image of the last camera number pressed will be displayed. Press again and repeat the above.

Single Camera Mode
Press the number of the camera in “Camera Select” key to see a full screen image of the camera selected.
In this mode, the monitor output port will output the camera that the user has selected.
Press the “Quad” key again to go back to the quad display.

Sequential Camera Mode
Press the “Seq” key and hold for 1 second to start the automatic camera sequencing. If any camera input has a video loss or no connection the quad will automatically skip this camera in the sequencing.

VCR Playback Mode
Press the “VCR” key and hold for 1 second to enter into the VCR Playback mode. If the VCR is not in playback mode there will be no display on the monitor. Press the play button on the VCR and you will see the playback on the monitor.

2X Zooming and Freeze
After you enter the Playback Mode, the user can press one of the numbers “1” to “4” Camera keys to get into the 2X zoom

mode to watch one quad picture full screen. The respective number will zoom the respective quad full screen. Press the same number key again and this will freeze the zoomed playback picture. Press the same number key again and the frozen image will be unfrozen. Repeated pressing will alternate between frozen and unfrozen.
Press the Quad key will go back to the full screen playback picture.
Press the “VCR” key again will exit the VCR Playback Mode.

Note: Make sure you stop the VCR playback to the end of the recorded section prior to Playback and press the record button to continue with normal recording.

Live Zoom Mode

The DCQ-2000 can be used for live zoom of any video source. However when doing this you must connect your live video source directly to the “VCR Input” on the Quad. Then you will enter the VCR Playback mode without the VCR being connected. The live image from your camera or other device then will be displayed. You can then zoom 2x via the camera number keys, this is described on the previous page under Zooming and Freezing.

Remember while in this mode the “VCR Output” will not have the Quad display and will not be recording while you are in the “VCR Playback” mode.

Setup Menu

Press the Menu key to get into the Setup Menu. There are 4 setup pages, press the Menu key repeatedly to change the menu pages on-screen. Use keys “<“ or “>” to select the item that you want to change, then use the “+” or the “-” keys to change the value or status.

1st OSD Menu

Auto Reset: Every time there has been an Alarm or V Loss event, the DCQ-2000 will trigger an internal timer. When the timer reaches the value that the user sets, this unit will clear the event automatically. (Unit:Second)
The user can clear the event by pressing any key.

Alarm Sens: The alarm event will not occur unless the Alarm trigger is longer than what is set here by the user. (Unit:millisecond) This is used as a debounce for noisy lines or

spuratic triggers.
VLoss Sens: The VLoss event will not occur unless the VLoss trigger is longer than what is set here by the user. (Unit:millisecond)

Quad Interval: This is the dwell time for display of the Quad picture while in the sequencing mode. (Unit:second)

2nd OSD Menu

Ch: This selects the input channel or camera number that is to be programmed.

Title: This is the six character title that can be programmed for each camera input.

Interval: This is the dwell time for each camera while in the sequencing mode.

Color: The color killer default is Auto to adjust for color or B/W cameras. If the video signal of the selected channel is with

very low chroma level, it must set to “Fix” to disable the autoremover. This usually happens with a very long cable connection between the camera and the Quad if no frequency compensation is used. The limitation of the length will depend on the specification of the cable.

Bri: This adjusts the brightness of the selected camera.

Con: This adjusts the contrast of the selected camera.

Sat: This adjusts the color saturation or amount of color of the selected camera.

Hue: This adjusts the hue or tint of the selected camera.

Alarm: There are three parts to this item;

1st selection is to set the type of external alarm equipment. This is NO (Normally Open) or NC (Normally Closed) types of contacts.

2nd is to select the status detected by this unit in the power-on initialization. This is either Open or Close.

3rd is to enable or disable the Alarm trigger of this channel or camera. (On or Off)

3rd OSD Menu

Quad: Enable or disable the on-screen display of the Date, Time or Title on the “VCR Out” and monitor.

VLoss: Enable or disable the unit to check for video loss for all cameras.

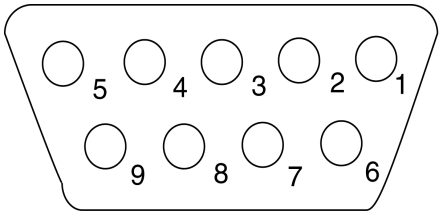
4th OSD Menu

P: The selects the page number of the alarm record event log. There are 11 pages with 9 records in each page with a total of 99 records maximum in the alarm log.

There are 4 parts to each record:

- Alarm or VLoss
- Camera Number
- Date
- Time

Alarm Port



DB-9 Female (Looking at Rear of Quad)

1. Alarm Out COM
2. Alarm Out NO
3. Alarm Out NC
4. GND
5. Alarm Control
6. Ch1 Alarm Input
7. Ch2 Alarm Input
8. Ch3 Alarm Input
9. Ch4 Alarm Input
Shield - GND

Note: The Alarm input 1 to 4 and clear input are pulled high internally. Connect the external alarm devices to these pins.The quad will detect the type of external alarm equipment automatically in power-on initialization but can be changed in programming also.
The internal relay was set to NC position normally for the Alarm output. So pin 1 and 3 will short normally, and will be opened when an event was occurred.
Pin 2 will be open normally, and will be closed when an alarm occurs.

Warning: The rating of the internal relay is:
AC 120V @ 1A or DC 30V @ 1A. The user must take care in not overloading this relay for safety reasons.

Alarm Mode Operation

Alarm Inputs

When a single alarm input is activated to a true alarm condition then that camera will become full screen for the duration of the alarm dwell. If the alarm is still true at the end of the dwell time, the Quad screen will display for its dwell period and then repeat the alarm dwell for that camera.

If multiple alarms are activated simultaneously, the the first alarm dwell will time out with its camera full screen and then then the Quad screen will appear. Then the second alarm will display its camera full screen and then the Quad screen. All the alarm cameras will display in order as above and repeat until all the alarm conditions are cleared.

Alarm Control

The Alarm Control connection to the DB-9 connector can be used to lock the alarming camera to full screen. After any alarm input has been activated and that camera is full screen, connecting the Alarm Control signal to ground will lock that camera to the homing mode. This will be the only camera you will see. If another alarm is activated this alarm camera will home for the dwell time and then go back to the locked home camera and NOT the Quad mode. The only way to release the Alarm Control locked camera is to press the “Quad” button to release this mode.

The Alarm Control signal can be physically connected to alarm inputs and when the alarm input is connected to ground (NO only) this camera will automatically be locked in the homed mode. Remember this locked homed camera can only be released by pressing the “Quad” key.

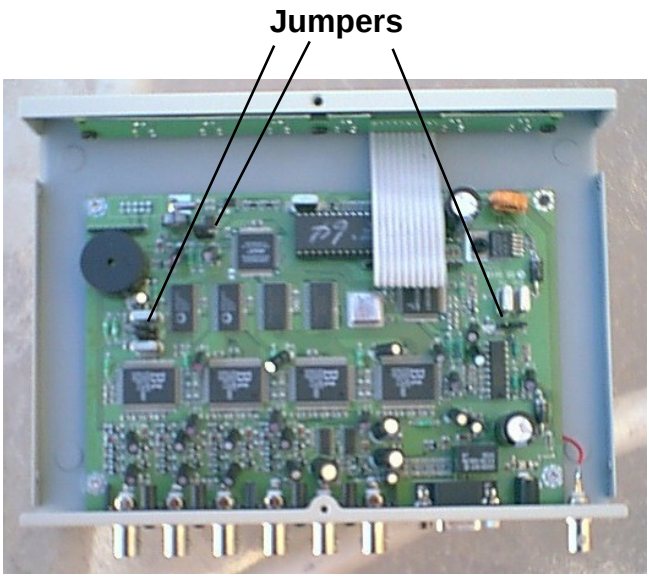
Alarm Output

The alarm output of the DCQ-2000 goes true whenever there is an internal VLoss alarm or external Alarm Input that has been true. This Alarm Output stays true for the length of the alarm dwell that has been programmed by the user. The alarm output is a Form C contact. There is a NO (Normally Open), a NC (Normally Closed) and a Common output.

The rating of the internal relay is:
AC 120V/240V @ 1A or DC 30V @ 1A.

PAL / NTSC

The DCQ-2000 is factory configured for the PAL format. However the DCQ-2000 can operate in the NTSC format. This requires the changing of the internal jumpers only. Please refer to an AVE approved service technician for converting the DCQ-2000 to NTSC format. There is a total for 4 jumpers.



Specifications

Video Standard	CCIR601 NTSC/PAL
Sampling Rate	910 x 525 pixels per line for NTSC 1135 x 625 pixels per line for PAL
Total Display Pixels	858 x 512 pixels for NTSC 864 x 576 pixels for PAL
Display Rate	60 fps NTSC 50 fps PAL
Quad Update Rate	60 fps NTSC 50 fps PAL
Camera Inputs (BNC)	Composite Video 1 V P-P 75 ohm terminated
VCR Input (BNC)	Composite Video 1 V P-P 75 ohm terminated
VCR Output (BNC)	Composite Video 1 V P-P into 75 ohm terminated load
Monitor Output (BNC)	Composite Video 1 V P-P into 75 ohm terminated load
Alarm Input (DB-9 F)	Hi-Z Impedance, NO or NC programmable. 1 per camera
Alarm Output (DB-9 F)	Relay Form C Contact NO / NC / Common AC 120V @ 1A DC 30V @ 1A
Operation Temperature	5 degrees to 45 degrees Celsius
Relative Humdity	5% to 85% Non-Condensing
Weight	1 lb. 14.5 oz
Size	8 5/8”D x 6 1/4”W x 1”H
Power (DC Coax)	12VDC @800mA 2.1mm x 5.5mm, Center Positive
Programming BackUp	Super Capacifor 7 days for T/D EEProm for setups 10 years

Warranty Information

MTI products are guaranteed to be free from defects in workmanship and material. If any failure, resulting from either workmanship or material defects should occur under normal and proper usage within the period stated below for each product from the original provable date of purchase, such failure should be repaired at no cost to the buyer for labor and parts if the defective product(s) is sent to MTI.

During the period of 12(twelve) months from the date of sale to the original end-user, MTI. will repair or replace(at our option) all necessary parts, except the outside cabinet trim, without charge for parts or labor required to make the repair or replacement.

This MTI warranty does not cover the following:

Products received for repair without an RMA number, sales or delivery receipt showing date of purchase by original customer. Damages caused by incorrect use, carelessness, unauthorized alterations, improper storage or unauthorized service installation or repairs. Damages caused by fire, flood, lightning, vandalism, collision, acts of God, or other events beyond the control of MTI. External parts such as cabinet and key pad. Damages resulting from loss of use, loss of time or inconvenience, costs of temporary replacement units or spares, property damage caused by this unit or its failure to work, or any other incidental or consequential damages. Hostile operating environments. In transit damage claims, improper handling by carrier of post offices. Products or parts thereof which have had serial numbers removed, altered or defaced. Damage defect or failure caused by or resulting from the operation of the unit by incorrect voltages. The use of components that do not meet MTI specifications.

IMPORTANT: This warranty is in lieu of all other warranties, guarantees or agreements whether expressed or implied and no person, dealer, or company is authorized to change, modify, or extend its terms in any manner what so ever.

Warranty Return Policy

Before sending any MTI product to the factory for warranty repair, the customer must obtain an RMA number. This number must appear on the outside of the box and on any documentation accompanying the warranty repair. The unit must be packed in the original shipping carton or in suitable packing offering a similar degree of protection. Separate items such as power cords, remote controls units, or transformers, should be individually wrapped so as not to cause scratches or other damage during shipment.

MTI will not accept any warranty repairs without an RMA number.

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