

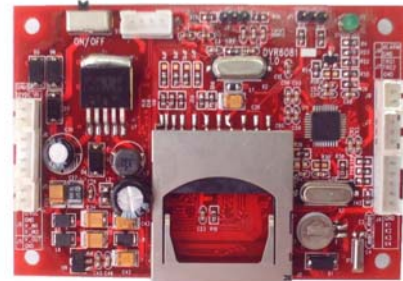


Description

This image recording module is specially designed for vehicle black box. It can capture 2 channel video signals in JPEG format and save to separate folder for easy search.

Features

- ✓ Small in size: 80x55mm
- ✓ 2 channel video input
- ✓ Capture 2-channel image alternatively, store into separate folder
- ✓ Single switch operation- on to start capture and off to stop
- ✓ On board Flash memory (option)
- ✓ On board SD card (option)
- ✓ DC12V operation
- ✓ Video output to TV
- ✓ Preset NTSC or PAL TV system input



Connector Description

Note: the connectors shown below will depend on the firmware design, not applicable for all models.

Connector	Function	Remark
JP1	Select NTSC/PAL	Need to be selected before power up
J1	NC	For debug purpose,
J2	SD card slot	Support up to 2G SD card
J3	NC	-
J4	Keyboard Input	4 bit binary input with common ground, internal pull high
J5	Video out	2-pins, To output video signal to TV set
J6	Camera input	4-pins, for video signal in and power supply (option)
J7-TG1	NC	-
J7-TG2	Switch input	Active Low, level hold
J8	Power	Aux power input, 12V DC, if J6 power no connected
J9	NC	-

Key Definition

Key	Name	Key	Name
0001	NOP	0111	Menu
0010	OK	1000	NOP
0011	Down	1001	Left
0100	NOP	1010	UP
0101	Right	1011	Mode
0110	Disp	1100	NOP

Note: all other combinations are NOP (no operation)

Operation

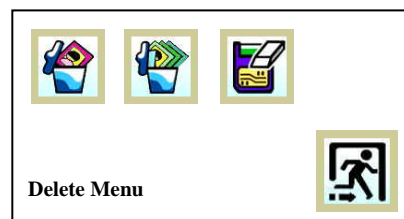
1. Keyboard
User can make his own keyboard according to the key definition stated and perform the following operation.
2. TV system selection
The module can run under either NTSC or PAL TV system, need to short the jumper JP1 on board before power up

A. Normal Operation

1. No key board is required for this application
2. Please refer to the application note below for the Key switch connection
3. To start capture, close the slide switch, to stop, open it. When capturing, the LED will be ON. The capture sequence will be Ch1, Ch2, Ch1... photos will be stored in different folder. There is a max of 1024 photos per folder.

B. Play back

1. Key board is required for this application when playback the photos in the module. User can also pull out the SD card and view the photos in PC
2. Connect video out to TV monitor when the system is not in capturing.
3. At preview, Press DISP to toggle view between Ch1 and Ch2. no more function in this preview mode
4. Press mode to enter playback mode. The capture photos will be stored in different folders for easy searching. The folders are named according to the different channels. If there is no file in the memory, it will show "NO FILE" and enter view mode
 - 4.1 press MODE button to enter playback mode
 - 4.2 press OK to enter thumbnail view, press again OK to normal view
 - 4.3 use LF/RT button to forward or rewind the image
 - 4.4 press UP to turn on off the OSD
 - 4.5 press DISP to show folder name, use UP/DN key to scroll, OK to select
5. Delete files from memory
 - 5.1 At playback mode, press MENU to enter playback menu, by using LF/RT key, one can select delete current image or all files in the current folder. Press OK to confirm and reconfirm by selecting a tick icon.
 - 5.2 One can select format to delete all files in all folders



c. Date Time Setup

1. At preview mode, press MENU
2. Use LF/RT key to select date or time and UP/DN key to set the correct digit. The setting will then store into system. Press OK to confirm.

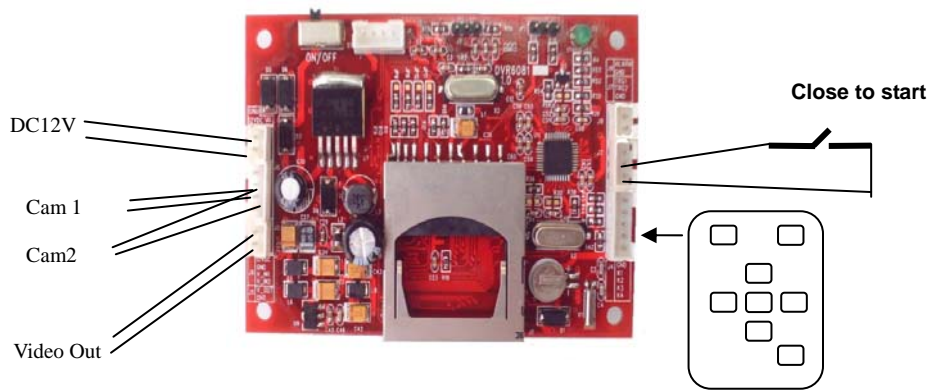


Summary of Key Operation

Key	Preview Mode	Play Back Mode	D/T Set up	Delete Menu
Mode	Change to Playback	Change to preview	-	-
Menu	Enter Setup	Enter Delete	Quit	Quit
UP	-	Turn on-off OSD	count up at D/T setting	-
DN	-	-	count down at D/T setting	-
OK	-	Enter thumbnail	Confirm	Confirm
LF	-	Previous file	Move cursor	Move cursor
RT	-	Next file	Move cursor	Move cursor
Disp	Toggle Ch1/Ch2	Folder list	-	-

Application Note

Connection Diagram



Specification

1. Electrical characteristics (at room temperature 25C)

Parameter	Condition	Min	Type	Max	Unit
Operation Voltage		7.5	12	13.5	V
Operation Current		238	145	128	mA
Standby Current	No Video o/p	215	130	120	mA

2. Image and file storage information

Image format	JPG
Image size	VGA (640x480)
File size per image	~40KB (depends on scene)
Interval per image per channel	3sec
Max image number per folder	1024 images
Max folder number per card	1024 folders
Max memory size for SD card	2G

3. Folder and File Name Format

- i. Folder Name: CH1-0000, CH2-0000, it will count up to CHx-1023
- ii. File Name: compose of 8 characters, representing month(x), day(y), hour(HH), minute(MM) and sec(SS)
 Eg. Xyhhmmss.jpg
 X: 1 -January, 2 - February and etc, A – Oct, B – Nov, C – Dec
 Y: 1-9 means 1-9, A for 10, B for 11 and so on, till V for 31st
 Eg. Image capture at Jan 16, 18:51:04 will be 1G185104.JPG