

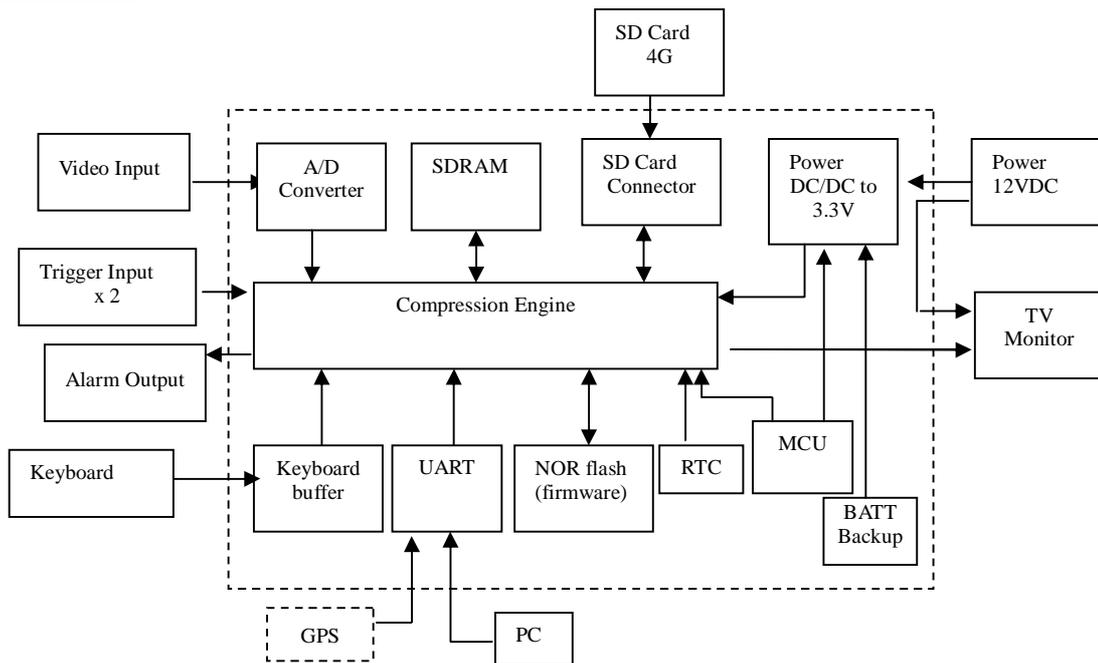
Description

This digital video recorder is specially designed for vehicle surveillance. It overcomes machine hang and files corruption issues, with built-in battery back up and watchdog timer. It is suitable for using in worst working condition.

Features

- ü Analog video input – 2 channels
- ü On board SD card support up to 4GB
- ü DC12V operation
- ü Motion detect to capture JPG/AVI
- ü File format – JPG, MJPEG
- ü Image size - VGA
- ü Video format of 320x240
- ü Video clip length up to 60sec at 5fps
- ü Video playback both in module and PC
- ü Pause and resume feature during playback
- ü Fast Forward, backward and frame by frame
- ü Vehicle number and date time stamp
- ü Interface to GPS module (Option)
- ü Vehicle number and system setup by PC
- ü Power failure protection to prevent file corrupt
- ü Watch dog for system monitoring
- ü Video output to TV
- ü On board hardware setting for PAL/NTSC TV system
- ü 2 Trigger input for different channel
- ü Alarm output, active low
- ü Hot plug key board for system testing and operation

Block Diagram



Electrical Characteristics (at room temperature 25C)

Parameter	Condition	Min	Type	Max	Unit
Operation Voltage		7.5	12	13.5	V
Operation Current	(no power output to camera, no charging)		180		mA
	Recording		190		mA
	With battery charging				mA
Battery charging time					min
Power failure time allowed	Battery full charged		30		sec

Image and file storage information

Image format	Video: MJPEG, QVGA (320x240), 1-5fps Still Image : VGA
File size	~470KB per video clip(40f-sec) 30KB per image VGA
Max file number per folder	1024 files
Max folder number per card	1024 folders
Max memory size for SD card	4GB

Connector Description

Connector	Function	Remark
JP1	Select NTSC/PAL	Need to be selected before power up
J1	UART	To connect PC thru RS232 adapter cable
J2	SD card slot	Support up to 4G SD card
J3	Keyboard input	4 bit binary input
J4	Video out	2-pins to output Video signal to TV set
J5	JPG/AVI select	Need to be selected before power up
J6	Video input	4-pins For 2-ch Video input and power supply
J7	TRG input	3-pins Active low, TG1 to activate Ch1, TG2 for Ch2
J8	DC input	2-pins, for DC12V input
J9	Alarm Output	2-pins. Active low to trigger external device
J10	GPS	4-pins. Reserve for GPS interface
J11	PWR on-off	Slide switch to turn on-off the power and also the backup battery

Key Definition

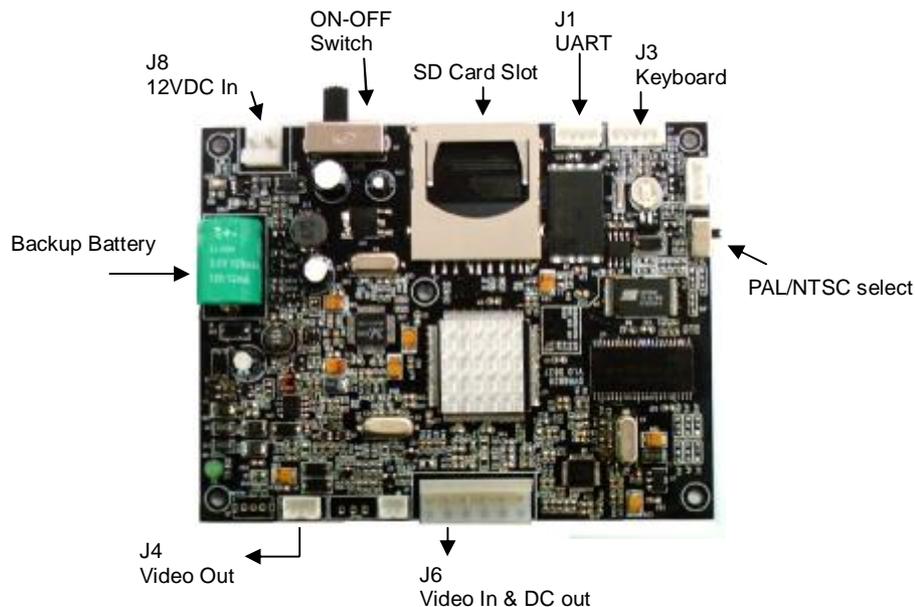
Key	Name	Key	Name
0001	SNAP	0111	NOP
0010	OK	1000	NOP
0011	Down	1001	Left
0100	NOP	1010	UP
0101	Right	1011	Mode
0110	DISP	1100	NOP

Note: all other combinations are NOP (no operation)

System Configuration

1. The system is installed in vehicle, no monitor nor keyboard to be connected when system is running. For system setup such as, testing, camera position, in the vehicle, an external keyboard and monitor are required.
2. The system accepts clean 12VDC and provides the same 12VDC to supply the external camera as an option. User needs to provide a regulated 12VDC to this system for the best performance.
3. A Lithium battery is used to backup the system to prevent from the file corrupt due to unexpected power drop. The battery can hold the system work for 30sec minimum.
4. The system accepts 2 channels audio/video input. However, it is working one channel at a time.
5. The system has 2 trigger inputs, it is used to activate the relevant channel for capture AVI/JPG. Once there is a trigger input, no matter TRG1 or 2, it will output a Low level signal thru Alarm port. It is used for activate external device.
6. A micro controller (MCU) is use to monitor the power and main DSP status to prevent from system hang. If the system hanged due to any reason, the MCU will re-boot the system until it is operating normally.
7. The UART interface is implemented for PC connection. A PC application software will be provided to setup the system and enter the vehicle number.
8. RTC is used for date time display and stamp to the video. The date time can be set by the PC interface, thru UART port. This makes the operation simpler.
9. File format of video clip is MJPEG. It can be playback on the module or PC. The video clip can be played in 7 modes, forward, fast forward, fast backward, frame by frame, pause, resume playing and stop. In PC, a viewing software is required since the file format is proprietary.
10. No user menu for the module operation. No file delete is allowed.

Board layout and connector location



Operation the Module

- 1 Power up system the first time: before power up, connect the device as below:
 - 1.1 J3: to keyboard thru a 5 pin flat cable
 - 1.2 J4: video output to TV set using coaxial cable
 - 1.3 J6: video input, connect to camera output; 12VDC output for camera, if required
 - 1.4 J8: connect the power cable, accept only 12VDC \pm 1V, note polarity.
 - 1.5 Insert the SD card. There is on board flash memory, if there is no SD card, it will store the files on flash memory and the files can only play on the module.
 - 1.6 Slide the on-off switch to ON, now the system will start operation. The welcome logo will display on the TV screen. Note the power up time may be differed from size of memory card.

All the connectors have the polarity, need to take care before plug in.

- 2 Preview Mode:
 - 2.1 Use DISP key to switch between channel 1 and 2.
 - 2.2 Use UP key to turn motion detect (MD) on-off, by default MD is ON. An icon of eye will be appeared to indicate the MD is ON. If MD is ON, when there is motion detected, it will perform a capture function. However, it is taking effective only for the channel under viewing.
 - 2.3 Use DN key to switch AVI/JPG, icons of either camera or camcorder will be shown on top of the screen.
 - 2.4 Use LF key to turn on-off the trigger input, by default trigger is ON. A trigger icon will be appeared on top of the screen. If TRG1 active, it will perform a capture function for Ch1. If at that moment it is in Ch2 viewing, it will switch to Ch1, after finished capture, it switches to Ch2 as former setting. If TRG1 activates during Ch2 recording, so, no action will be taken.
 - 2.5 Use RT key to turn on-off the alarm output, by default the alarm out is ON. There is alarm icon appeared on top of the screen. Alarm is output when there is either trigger input or motion detected.
 - 2.6 Press SNAP key to take a video clip instead of MD function. During recording, a red dot will be appeared and flashing on top of the screen. It can't be stopped unless it reaches the preset recording time.
 - 2.7 Press MODE to switch between preview or playback mode
 - 2.8 If the system has been armed both MD and Trigger, either one effective will perform capture function, no priority. If either one activated during the video recording period, no action will be taken, until the recording stopped.

- 3 Playback Mode:
 - 3.1 Press MODE to enter playback mode. It will show the last file of JPG/AVI captured with the OSD. This OSD can be removed by pressing UP key. If there is no files inside the memory, it will pop up " NO FILE" and return to preview mode
 - 3.2 Use LF/RT key to select the desired photo/video clip.
 - 3.3 Use OK to enter thumbnail display. Use LF/RT to select, OK again to confirm the selected file.
 - 3.4 Press DN key to start playing the selected video clip
 - 3.5 During playback, no matter in normal or fast speed, use UP to pause, press again to resume normal speed playing.
 - 3.6 During pause, press RT/LF to play frame by frame, forward or reverse arbitrary.
 - 3.7 During normal speed playback, use LF key to fast backward, RT key fast forward.
 - 3.8 During playing, in any mode, Use OK key to stop the video and back the start position.
 - 3.9 Press DISP key will enter folder list. Use UP/DN key to select the folder. The folder name is sorted by the date and time. Press OK to confirm selection.

Note: never pull out the SD Card when the module is recording, the file will be corrupted if do so.

System Setup using PC interface

Before setup, need to prepare the RS232 adapter cable and connect to pc com port. Open the program DVR6828PC.exe. The application will be opened, as below:

- 1 Open the COM port: make sure the correct adapter cable is connected to the module (J1) and the module is powered. Select the COM port no. Please note some PC/notebook uses different number of serial port, need to check the right port number before it can connected properly. The baud rate is set to 9600. Press OPEN to connect to module.
- 2 Set the Clock: one can get the clock from module or get the system clock from PC. Then press SET to set the clock to module. Note that if take the clock from PC system, need to set ASAP. Since the system clock will not update this application automatically.
- 3 Memory Operation: one can format the memory card by press FORMAT. A window will be popped up for confirmation. Note this action can't be undo. Once formatted, the content of the card will be erased.
- 4 Motion Detect Setting: to turn on-off the MD. By default, it is always ON at power up. Use short cut key UP to turn off and



- ON. Sensitivity can also be selected as usual.
- 5 AVI Setting
 - 5.1 Image quality can be set for Hi, Mid and Lo, the higher the quality, the bigger the file size.
 - 5.2 Duration: limited to 10-60sec, this is the best time frame for system, more stable.
 - 5.3 Frame rate: it can be set from 1fps to 5fps, higher frame rate will have bigger file size.
 - 6 Vehicle No.: max 10 characters, include text or digit. This will stamp on the photo at the left hand side lower bottom.

Note: before connect to PC, please turn off the MD by press UP key, to reduce the error rate.

Key Operation (summary)

	Preview	Playback	During normal Playing	During Pause
SNAP	Press to capture	-	-	-
Mode	Enter playback	Enter preview	-	-
OK	-	Enter thumbnail	Stop	Stop
UP	MD on/off	Turn ON/OFF OSD	Pause	Resume normal forward playing
DN	JPG/AVI	Start playback	-	-
LF	TRG on/off	Select file	-Fast reverse	Reverse frame by frame
RT	Alarm on/off	Select file	-Fast forward	Forward frame by frame
DISP	Ch1/Ch2	Select folder	-	