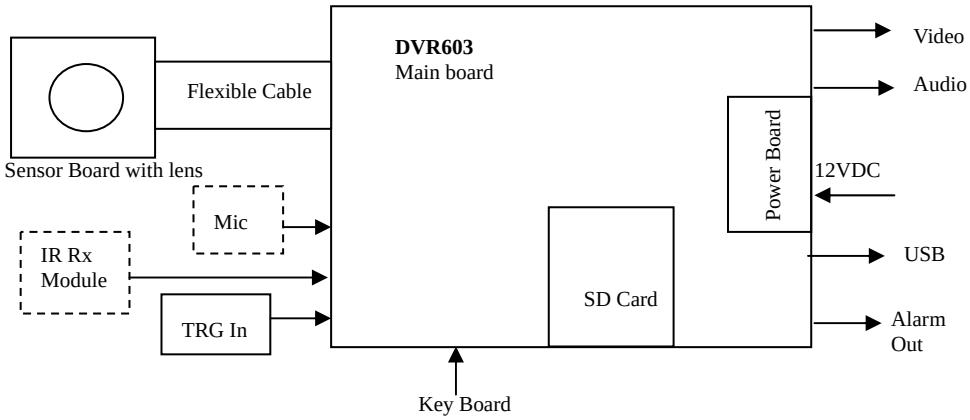
Introduction

This is a low cost but high performance DVR. By using an advance video DSP, it is able to capture a high quality image or video clip. The motion detect algorithm is implemented in the design.

Key Features

- ✓ Real time Video output to TV
- ✓ High Quality JPEG image of mega pixel
- ✓ High Quality AVI of VGA at 30fps
- ✓ Motion detect of various zone, from 1 to 25 zone
- ✓ RTC, OSD
- ✓ Date time stamp
- ✓ Storage to SD card
- ✓ Remote control key operation
- ✓ Reserve UART interface for embedding the module to other system
- ✓ 12V DC operation
- ✓ Suitable for Gun type or Dome camera case

Block Diagram

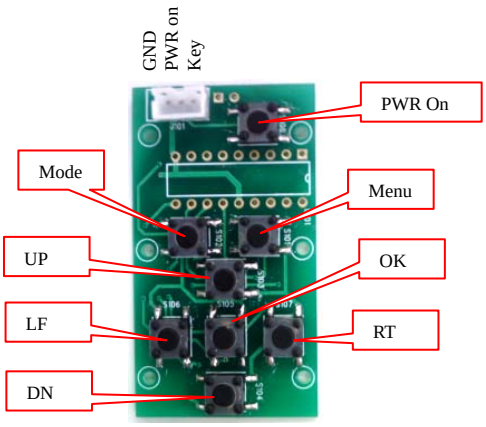


Keyboard Design

We have provided the keyboard for the sample unit such that the customer can evaluate the function of DVR603 as well as the reference design of the key operation. It is 7- Key design: mode/menu/UP/DN/LF/RT/OK. Extra key of PWR on is a spare key.

1. Mode: use to change playback or preview
2. Menu: for setup or quit the setup
3. LF/RT/UP/DN for item set
4. OK to confirm
5. PWR on – to turn on off the module

Short Cut Key
UP – to turn on off motion detect
DN – to toggle between JPG or AVI
LF – to toggle Trigger input on off
RT – to toggle Alarm output on off



Electrical Specification

V_{DD} = 12VDC TA = 0 to 25°C

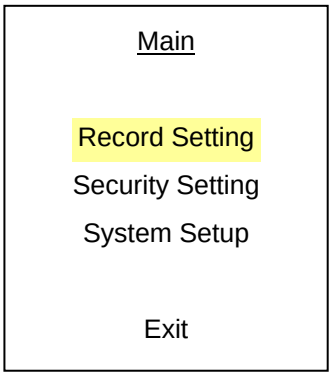
Parameter	Condition	Min	Typ	Max	Unit
DC supply voltage		8	12	13.5	V
Operation Current (w/o SD card)	Preview		130		mA
	Capture		160		mA
	Playback		110		mA
Operation Current (with 1G SD card)	Preview		148		mA
	Capture		195		mA
	Playback		146		mA

Note: different branded SD card and memory size will have different current consumption.

Power On and settings

Power On

1. Note: 12VDC is used in this system, it is converted to 5V and 3.3V for the DSP and other devices.
2. Plug in power cable and video cable to TV set
3. Press power on button switch once to turn on the module
4. there is power on welcome logo on TV screen
5. the LED on the main board lit up, that means the module is successfully function.
6. when first time power up, it will enter preview mode, wait a while until the sensor calibration itself and get the correct white balance and gain, fine the lens focus is possible

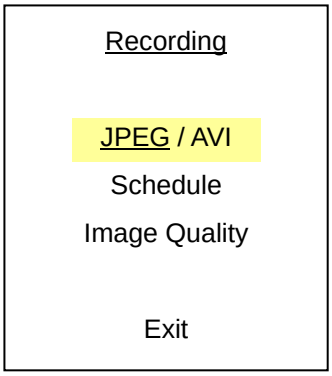


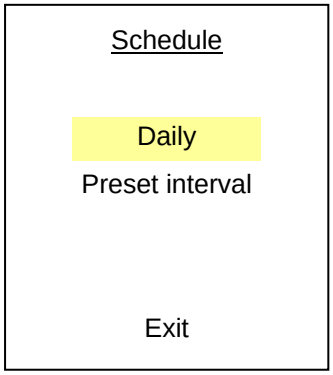
Main Menu

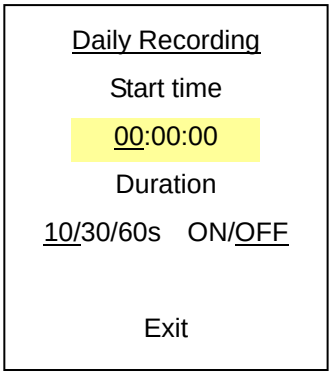
1. Press Menu Key to enter
2. Recording Setting: to Set recording mode, schedule, image quality, auto recording
3. Security Setting, include motion detect setting and alarm output
4. System Setup, to setup date time, language, factory default setting, format SD card
5. use UP/DN to select and OK to enter selection

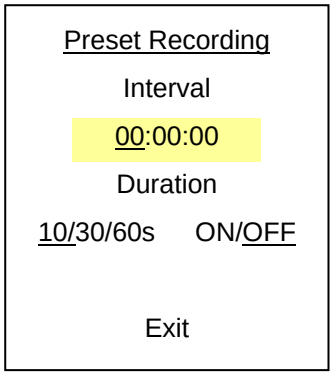
Recording Menu

1. Format: JPEG or AVI, use LF/RT key to select, OK to confirm, default is JPEG
2. Schedule: press OK to select, can set daily recording or preset
   - 2.1 if daily, set start time and duration, then the DVR will start recording everyday at that preset time and duration, duration from 10s, 30s to 1Min.
     - 2.1.1 Time setting: Use LF/RT to select HH, MM, SS, UP/DN key to change digit.
     - 2.1.2 Duration setting: use UP/DN key to select
     - 2.1.3 Turn on-off the daily recording: use UP/DN to select









2.2 If preset recording, then the DVR will perform repeat recording at preset interval and duration. For instance, if interval is set to 01:00:00(1hr) and duration is set to 10sec, then the DVR will start recording every one hour for 10sec. Preset interval can be any from 00:00:00 to 23:59:59, duration from 10s, 30s, to 1Min

2.2.1 Interval setting: Use LF/RT to select HH, MM, SS, UP/DN key to change digit.

2.2.2 Duration setting: use UP/DN key to select

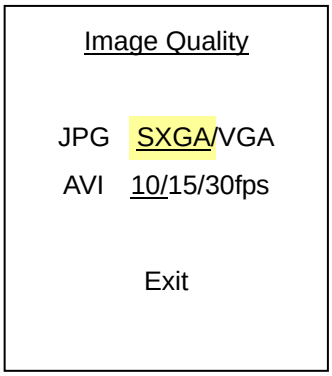
2.2.3 Turn on-off the interval recording: use UP/DN to select

2.3 User can select either one schedule. If it has been set to Motion Detect On in security setting, this schedule is therefore turn off

3. Image Quality:

3.1 If set JPEG, can set mega-pixel or VGA, Default mega-pixel, press LF/RT to toggle, UP/DN to save and leave to other item

3.2 If set AVI, can set frame rate 10fps, 15fps, 30fps, default 10pfs. Use LF/RT key to toggle



Security Setting

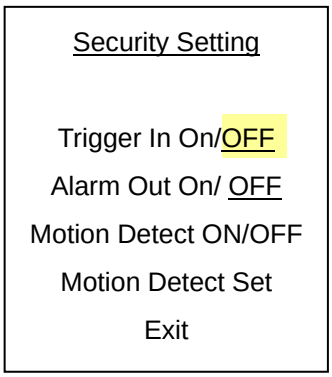
1 Trigger input on/off: to turn on off the trigger input, use LF/RT to select, UP/DN to confirm and leave

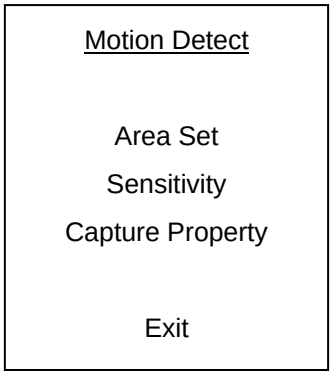
2 Alarm output on/off: to turn on off the alarm output, use LF/RT to select, UP/DN to confirm and leave

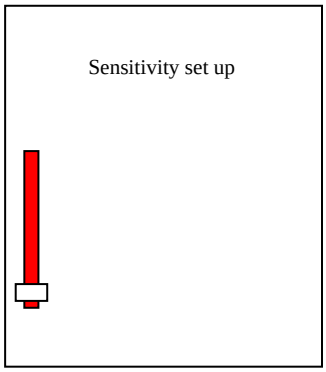
3 Motion Detect in/off, to turn on off the motion detect function, LF/RT to select, UP/DN to confirm and leave

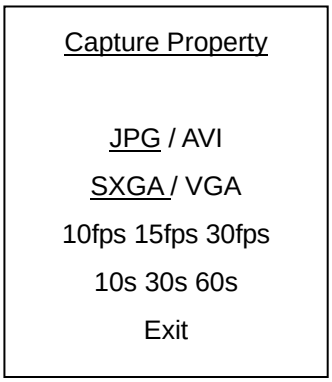
4 Motion Detect setup: to set the motion detect items such as the area, sensitivity and capture properties

4.1 Area setting, the whole area is divided to 5x5 grids, user can select whole or any of 25 grids. By default it is selected the whole area, use OK to confirm un-select that grid, use LF/RT/UP/DN key to move other grid, press mode or menu key to save and quit. A green rectangle will be displayed to indicate that the area is not active.







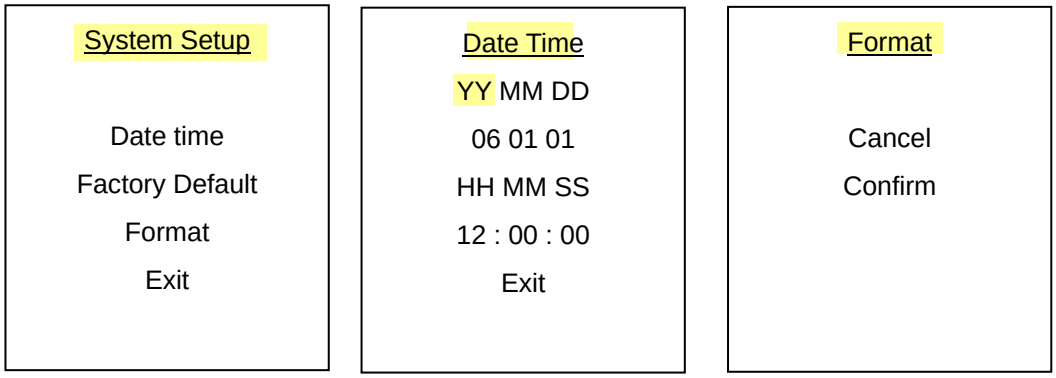


5 Sensitivity Set up

There is a red bar on the left hand side of screen, use UP/DN key to select sensitivity. The higher the dial, the higher sensitivity.

System Setup

1. Date Time: the system has built-in the real time clock, and time stamping to the image, enter the correct date time is essential for the system. Press OK to enter date time setting. Use UP/DN to increase/decrease digit, LF/RT to shift next field, OK to confirm
2. Factory Default setting, In some cases, the user wants to cancel all settings and resume to the factory setting, press OK to confirm.
3. Format on board memory or SD card. Reconfirmation is required when press OK



Operation

Preview:

1. Press mode to toggle between preview or playback
2. At preview mode, use short cut key UP to set MD on off, use DN to set JPG or AVI,
3. Snap shot manually: press OK to take a picture or AVI

Playback

1. at playback mode, use LF/RT to search previous or next file to view, press DN to start playing AVI
2. at playing AVI, use RT for fast forward, press OK to stop, LF for fast backward, OK to stop. Use DN to pause, UP to resume. During FF or FB, need to stop before change mode. Resume will enter normal play back speed at any cases.
3. delete file: press Menu to select delete one or delete all, confirmation is required.

Keys Operation matrix

	Preview	Playback	Playing AVI
Mode	Change to playback	Change to preview	-
Menu	Enter setup Menu	Enter file delete menu	
UP	MD on off	-	Resume to normal playing
DN	JPG/AVI	Enter to play AVI	Pause
LF	Trigger i/p on	Previous file	Fast Backward
RT	Alarm o/p on	Next file	Fast Forward
OK	Snap shot	-	Stop

	Set up Menu	Date time setting
Mode	-	-
Menu	Quit menu mode	Quit menu mode
UP	Select item	Increase digit
DN	Select item	Decrease digit
LF	Cfm and shift to previous	Cfm and shift to previous
RT	Confirm and shift to next	Cfm and shift to next
OK	Confirm and quit	Cfm and quit

Explanation of the Icons on screen display

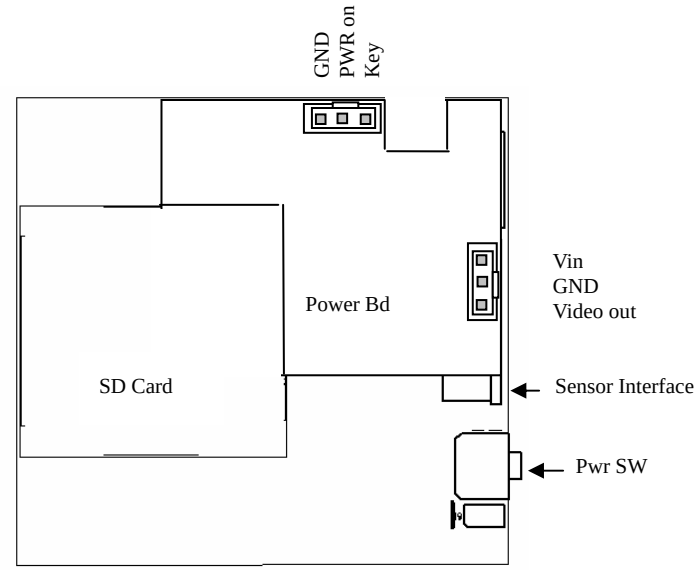
Capture mode: AVI	Capture mode: JPG	Motion Detect On	Alarm Output On
Schedule : Daily	Schedule : Interval	Trigger Input On	

Application Note

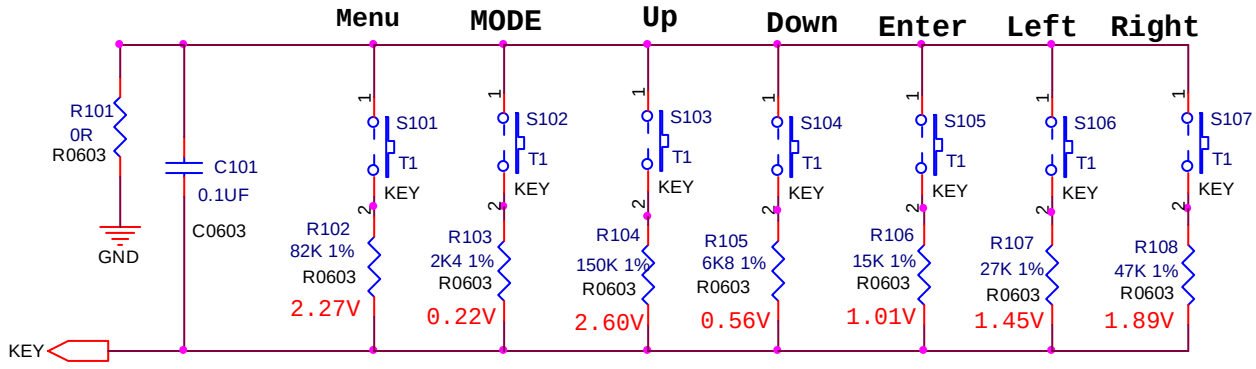
1. Power, video out and Key board Interface

A power board has been added to the main board to allow 12V DC input. 2 connectors are provided for connecting the video and key board connection. A demo key board has been provided for testing purpose. Customer can build his own key board for real production.

1.1 Location of the Connector



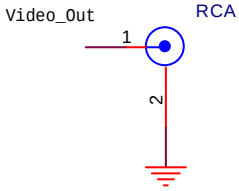
1.2 Key Board Circuit



Note: the keyboard input of DSP is connected to internal ADC circuit, thus, the accuracy of the resistor is important in this application

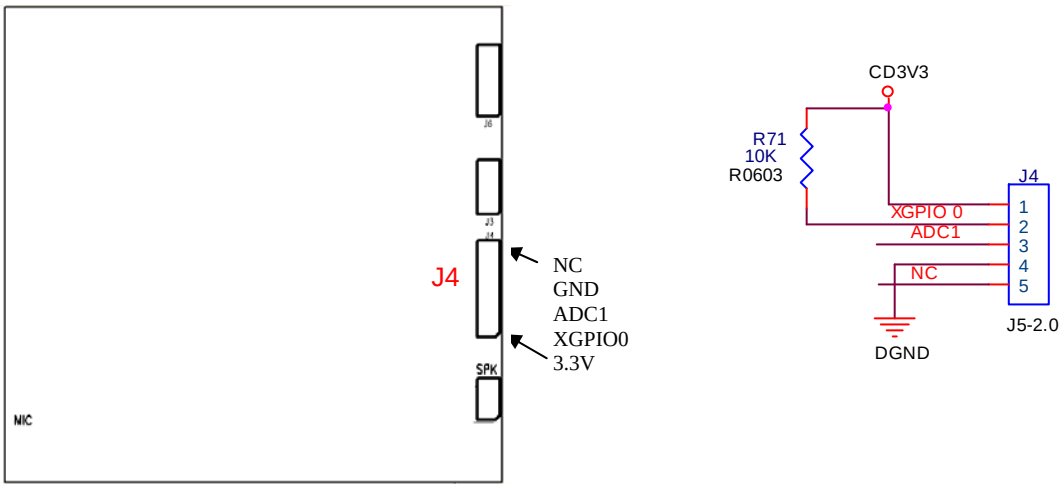
1.3 Power On switch

1.4 Video Out connector



2. Alarm Output and Trigger Input

2.1 Location of the I/O port



2.2 Alarm Output

The module use XGPIO0 as alarm output, active low. That means, when there is a motion detect from the image sensor, it will output a low signal. Normally this pin is high, 3.3V

2.3 Trigger Input

The module use ADC1 as trigger input, active low. That means, the module can accept external trigger signal to do the capture function. It is internal pull high (3.3V).

3. IR Remote control

If user wants to use IR remote control circuit, need to contact the supplier for the version which support IR remote control.