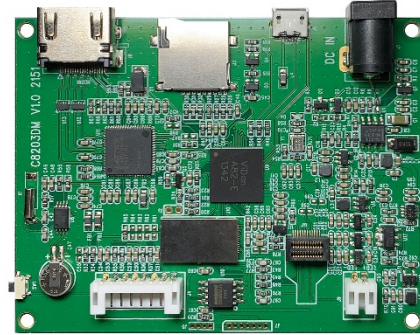


**Introduction**

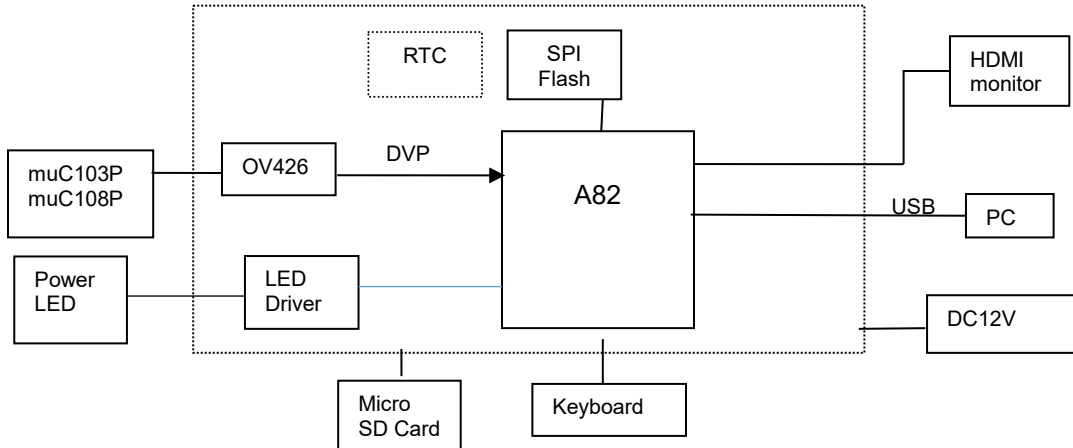
This module has been designed for muC103P/ muC108P and output real time video to HDMI monitor. It can detect automatically which camera has been connected at power up. Means customer can build a video system which can accept multiple cameras. It has built in LED control circuit to provide the optimum lighting for camera illumination. It performs still image capture as well as video recording and store files to micro SD card.



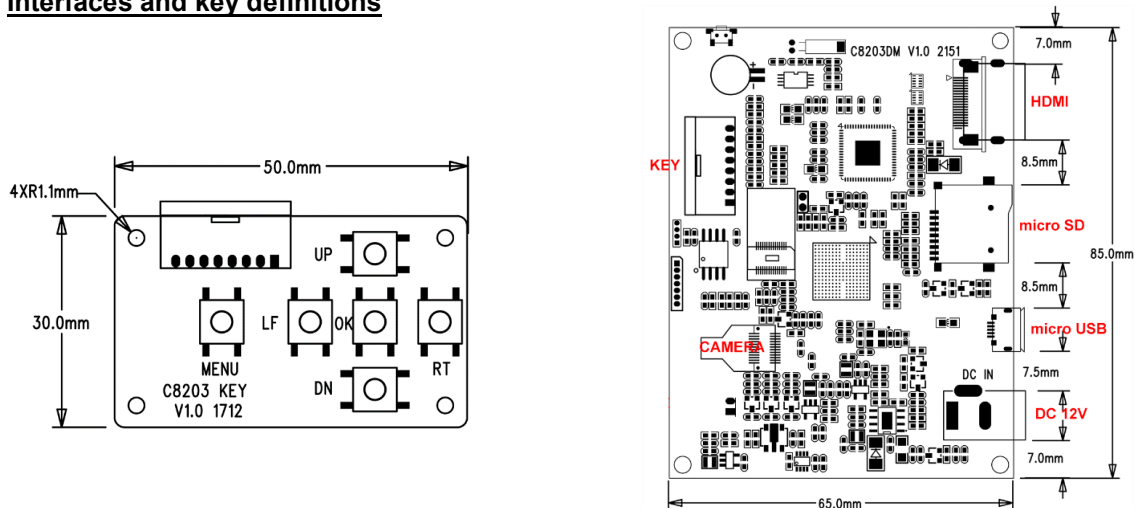
**Key Features**

- ✓ Interface to muC103P/muC108P
- ✓ Real time Video output
- ✓ HDMI output 1280x720@ 60fps
- ✓ Simple operation for AWB
- ✓ AVI recording and JPG snap shot
- ✓ Store to SD card, up to 32G
- ✓ Image quality fine tune possible
- ✓ RTC with battery backup
- ✓ Auto detect camera
- ✓ 12V DC operation
- ✓ Support ext power LED 3.3V/900mA.
- ✓ Individual GPIO for key input

**Block Diagram**



**Interfaces and key definitions**



## Operation

1. Power on off the module
  - a. Connect HDMI cable to external HD monitor
  - b. Connect camera module
  - c. Connect external power LED, up to 3.3V/900mA
  - d. Plug in 12V DC power.
  - e. The module will boot up automatically. Video will be displayed in the center of the monitor, and OSD on the upper right corner



2. White balance calibration
  - a. Press DN key, it will perform color balance
3. LED output control
  - a. Press UP key to change external LED level  
Maximum -> medium -> low -> off -> maximum
  - b. LED is set to maximum brightness at start-up.
- For muC108P
  - a. LED brightness is controlled by DSP automatically.
4. Record video clip and snap still picture
  - a. Make sure micro SD card is existed before capture
  - b. Press LF to snap a still picture, a camera icon will be flashed once in the center of display
  - c. Press RT to start video recording, press again RT to stop. When recording, a red dot as well as timer will display on the upper right corner of display
  - d. Maximum recording duration is 30min.
5. Menu operation
  - a. Press MENU to enter menu display
  - b. Use UP/DN key select item, and use LF/RT to change value, use OK key to confirm and quit
    - i. Brightness : 1-9
    - ii. Contrast : 1-9
    - iii. Sharpness : 1-5
    - iv. Reset file number: clear file number and start from IM\_00001, effective from next time capture
6. Date time setup
  - a. Press MENU and hold for 2 second then release, it will enter D/T setup menu
  - b. Use UP/DN to increase or decrease digit, use LF/RT to move field, OK to quit.

BRIGHTNESS	5
SATURATION	4
CONTRAST	3
SHARPNESS	1
RESET FILE NUMBER	
FACTORY DEFAULT	
SAVE & EXIT	
C8203DL-20220504	

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7. Play back video files
  - a. Pick out the micro SD card and play it in PC or
  - b. Connect module to PC thru USB cable.

8. Connect to PC
  - a. It is mass storage device, like external hard disk for PC
  - b. When connected, HDMI monitor will show USB cable logo and PC screen will pop up the window to show the content of the micro SD card installed on the module. No other module operation will be performed in this mode.
  - c. If there is no SD card installed, it will not enter mass storage mode.
  - d. Video files is placed under folder of DCVD, file name is IM\_0xxxx.avi or IM\_0xxxx.jpg
  - e. When disconnected from PC, the module will be rebooted automatically.
  - f. When connected, never remove the SD card from the module, otherwise, system will hang and SD card may be damaged.

**Electrical Characteristics** (at room temperature 25C)

Parameter	Condition	Min	Typ.	Max	Unit
Operation Voltage		<b>6.5</b>	<b>12V</b>	<b>13.5V</b>	V
Operation Current	With camera connected and LED off	105	65	60	mA