

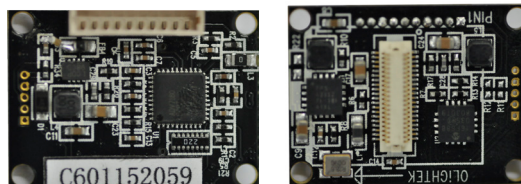
# DRV060-CV-R02

## SVGA060 CVBS Drive Board

### User manual

#### Features

- Multi-format composite video input(default is PAL)
- Low power consumption
- Industrial temperature grade
- Wide power supply
- Custom Re-configurable



#### General description

DRV060-CV-R02 is an analog composite video input driver board for SVGA060 OLED microdisplay. The low power consumption decoder can automatically detects and converts standard analog baseband television signals compatible with worldwide NTSC, PAL, and SECAM standards into digital YCbCr 4:2:2 component video data compatible with the 8-bit ITU-R BT.656 interface standard. Default driver board setting is PAL input, and the resolution is 768x576, support mono or color signal.

The display center is accord to the driver PCB center, convenient for design and set up optical system.

The six input pins allow user to adjust the brightness, contrast of the display. One CMOS standard serial communication interface allow user to configure all register of the decoder and display. So user can re-configure the driver board flexible.

Low-noise, low-dropout DC/DC convertor can support 5V-17V wide input voltage.

#### Power and consumption

Input voltage	DC 5~17V
Typical power consumption	500mW (Include display)

#### Input video signal

Video signal	Composite video
Voltage level	0~1.5 Vpp
Input resistor	75Ω
Output (PAL)	768×576

#### Interface (3.3V CMOS standard)

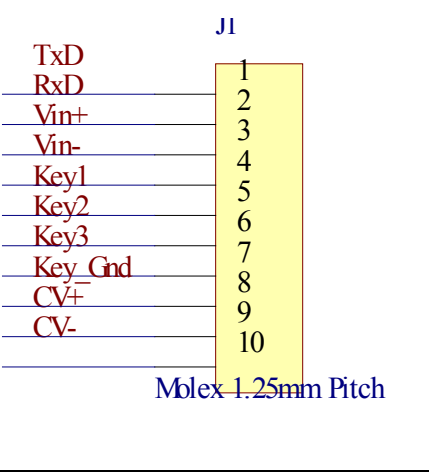
I/O definition (active low)	Function
Key1	Increase Brightness(++)
Key2	Reduce Brightness(--)
Key3	Increase Signal Contrast(++)
Key1+Key2	Brightness & Contrast Reset Hardware Reset
TxD/RxD	CMOS 3.3V RS232 interface
COM Setting	9600/N/8/1

#### Mechanic dimension

Dimension (L×W)	27.4mm×20mm
Display center is accord to drive PCB center	

## Interface and pin definition

No.	Name	Function	Voltage level	J1
1	TxD	RS232 Send Pin	3.3V	TxD
2	RxD	RS232 Received Pin	3.3V	RxD
3	Vin	Power Input	5~17V	Vin+
4	Gnd	Power Gnd	0V	Vin-
5	Key1	Increase Brightness	3.3V	Key1
6	Key2	Reduce Brightness	3.3V	Key2
7	Key3	Increase Contrast	3.3V	Key3
8	Key_Gnd	I/O Gnd	0V	Key_Gnd
9	CV+	Video Input +	0~1.5 Vpp	CV+
10	CV-	Video Input -	0V	CV-



## Function key description

All of the Keys are active low pulse, and must be not less than 20ms. If the low pulse is more than 20ms, MCU will do the same operate continually by every 20ms.

**Key1:** Only when temperature compensation disabled, Increase Display 19H register value: (19H)++, adjust range is 20H~ FFH. If (19H) less than 20H, then recover to FFH. It's effect to adjust Display common cathode voltage, and make the Display brightness change from darkest (FFH) to brightest (20H).

**Key2:** Only when temperature compensation disabled, Decrease Display 19H register value: (19H)--, adjust range is 20H~ FFH. If (19H) less than 20H, then recover to FFH. It's effect to adjust Display common cathode voltage, and make the Display brightness change from darkest (FFH) to brightest (20H).

**Key3:** Increase Display 08H register: (08H) ++, adjust range is 00H~ FFH. It's effect to adjust the brightness of input video signal, from darkest to brightest.

$$\text{Output} = \text{Input} + (\text{Reg}(08\text{H}) - 80\text{H})$$

Reg(08H)	Result
00H	Signal is the darkest
80H	Signal is no change
FFH	Signal is the brightest

**Key1+Key2:** Brightness and contrast return to the initial state (The state before you change the register value).

## Communication description

RxD and TxD pin are work in COMS 3.3V standard, it cannot connect to PC RS232 port directly.

Every command must be sending in 600ms and total bytes must be less than 64 bytes, otherwise, will receive the error code.

Communication interface support master controller to read/write the register value of Display, Decoder and EEPROM. The change of the Decoder and Display will effect immediately, but when power down or reset, it will lost.

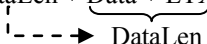
*The change of the EEPROM is equal to modify the default setting, will effect after power up in next time or reset.*

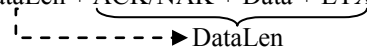
*Display, Decoder and EEPROM register address range are both 00H~FFH. Driver board's MCU will not validate the address and values in received command, so please use it be carefully and make reference of the related spec or contact our technical supports.*

**Communication mnemonic symbol**

Mnemonic	Code(Hex)	Signification	Error Code		Signification
			Mnemonic	Code(Hex)	
STX	02h	Start symbol	Err_Head	F0h	Start symbol error
ETX	03h	End symbol	Err_End	F1h	End symbol error
ACK	06h	ACK symbol	Err_CMD	F2h	CMD symbol error
NAK	07h	NAK symbol	Err_DateLen	F3h	Data Length error
CMD	00h	Read soft version	Err_Frame	F4h	Frame error
	11h	Read Display	Err_FIFO	F5h	FIFO overflow
	12h	Read Decoder	Err_RxProc	F6h	CMD process error
	13h	Read EEPROM	Err_TimeOut	F7h	CMD timeout
	21h	Write Display	Err_Waiting	F8h	CMD not finished
	22h	Write Decoder	Err_Unknow	FFh	Unknown CMD
	23h	Write EEPROM			

**Communication command formatting**

Send: STX + CMD + DataLen + Data + ETX  


Response: STX + CMD + DataLen + ACK/NAK + Data + ETX  


**Command usage**

1. Read command (All command are fixed in 6 bytes)

Send:

STX	CMD	Length	Add0	ReadLen	ETX
02	00/11/12/13	03	00~FF	01~FF	03

Succeed Response:

STX	CMD	Length	ACK	Data0	.....	Datan	ETX
02	00/11/12/13	03~FF	06	00~FF	.....	00~FF	03

Error Response:

STX	ErrCode	Length	NAK	ETX
02	F0~FF	02	07	03

Read command examples:

Read Display register from 00H to 0FH: 02 11 03 00 10 03

Read Decoder register from 00H to 20H: 02 12 03 00 21 03

2. Write Command ( $6 \leq \text{Total Bytes} \leq 64$ )

Send:

STX	CMD	Length	Add0	Data0	.....	Addn	Datan	ETX
02	21/22/23	03~3C	00~FF	00~FF	.....	00~FF	00~FF	03

Succeed Response:

STX	CMD	Length	ACK	ETX
02	21/22/23	02	06	03

Error Response:

STX	ErrCode	Length	NAK	ETX
02	F0~FF	02	07	03

Write command example:

Write Display register (01H) = 41H, (19H) = A0H: 02 21 05 01 41 19 A0 03

**MECHANICAL CHARACTERISTICS**

