

HDMI to RGB converter.	
Part Number:	MCIB-11
Version:	2
Date:	16/10/2015
Revision History	
Date	Description of change
29/6/2015	First draft
16/10/2015	Clarified Links and Touch. Added Mechanical Drawing.



MCIB-11 HDMI to RGB

Overview & Features

The MCIB-11 is an HDMI to RGB converter. Ideal for connecting a range of Midas TFT displays to a Single Board Computer such as the Raspberry Pi.



Features

- Standard High Definition Multimedia Interface (HDMI) connector.
- 40 way 0.5mm pitch FFC TFT display connector.
- Connections for power, EDID programming and resistive touch screen.
- On board adjustable constant current LED backlight driver 5mA to 80mA.
- Single 5V power supply requirement.
- EEprom (24C02) for Extended Display Identification Data (EDID) storage.
- Mechanical dimensions 50 x 40 x 11 mm.
- Pin compatible with the following Midas displays:

MCT035S	3.5"	320 x 240
MCT043J	4.3"	480 x 272
MCT050J	5.0"	800 x 480
MCT070M	7.0"	800 x 480

Other Midas TFT displays can be connected using a simple interface board.

Connections

CN1 19PIN HDMI AMP 1747981-1	Symbol	Description
1	D2+	TDMS Data 2+
2	D2S	TDMS Data 2 Shield
3	D2-	TDMS Data 2-
4	D1+	TDMS Data 1+
5	D1S	TDMS Data 1 Shield
6	D1-	TDMS Data 1-
7	D0+	TDMS Data 0+
8	D0S	TDMS Data 0 Shield
9	D0-	TDMS Data 0-
10	DC+	TDMS Clock+
11	DCS	TDMS Clock Shield
12	DC-	TDMS Clock-
13	CEC	Consumer Electronic Control
14	NC	Not Connected
15	SCL	Display Data Channel Clock
16	SDA	Display Data Channel Data
17	GND	Ground
18	+5V	+5V power From HDMI
19	HPD	Hot Plug Detect

CN3 0.1" pitch header	Symbol	Description COMMON TO ALL VERSIONS
1	#CS	Display Chip Select (Leave open)
2	SCL	Display Serial Clock (Leave open)
3	SDA	Display Serial Data (Leave open)
4	XR	Touch XR to external circuit
5	YD	Touch YD to external circuit
6	XL	Touch XL to external circuit
7	YU	Touch YU to external circuit
8	GND	Ground
9	SCDT	HDMI Sync Detect (link to 10)
10	SHDN	Backlight shutdown (Link to 9)

CN4 10PIN 0.1" pitch header	Symbol	Description
1	+5V	+5V power From HDMI
2	SCK	EDID I2C clock
3	SDA	EDID I2C data
4	GND	Ground
5	VIN	+5V Supply to Board

CN2 40Pin 0.5mm pitch Display Connector	Symbol	Description
1	K	LED Backlight -
2	A	LED Backlight +
3	#CS	Chip Select
4	VDD	+3.3V
5	R0	Red Data 0
6	R1	Red Data 1
7	R2	Red Data 2
8	R3	Red Data 3
9	R4	Red Data 4
10	R5	Red Data 5
11	R6	Red Data 6
12	R7	Red Data 7
13	G0	Green Data 0
14	G1	Green Data 1
15	G2	Green Data 2
16	G3	Green Data 3
17	G4	Green Data 4
18	G5	Green Data 5
19	G6	Green Data 6
20	G7	Green Data 7
21	B0	Blue Data 0
22	B1	Blue Data 1
23	B2	Blue Data 2
24	B3	Blue Data 3
25	B4	Blue Data 4
26	B5	Blue Data 5
27	B6	Blue Data 6
28	B7	Blue Data 7
29	GND	Ground
30	PCLK	Pixel Clock
31	DISP	Display On
32	HSYNC	Horizontal Sync
33	VSYSN	Vertical Sync
34	DEN	Display Enable
35	SCL	Serial Clock
36	SDA	Serial Data
37	XR	Touch XR
38	YD	Touch YD
39	XL	Touch XL
40	YU	Touch YU

Electrical Specifications

Absolute Maximum Ratings		
Operating temperature	0 to +70	°C
Storage temperature	-40 to +125	°C
ViN	6.0	V
CN1,2,3 inputs and outputs w.r.t VSS	-0.3 to +3.6	V
CN4 inputs and outputs w.r.t VSS	-0.3 to ViN+0.3	V

Typical Electrical Characteristics				
Parameter	Min	Typ	Max	Unit
Supply Voltage ViN	4.75	-	5.5	V
Supply Current IiN (board only no HDMI signal)	-	12	-	mA
Supply Current IiN (3.5" TFT 40mA backlight current + HDMI signal)	-	190	-	mA
LED Backlight voltage	-	-	27	V
LED Backlight current	-	-	80	mA

LED Backlight Current

The LED Backlight is driven by a constant current circuit which can be set for various currents using LK9, LK10, LK11, and LK12. Below is a Table showing the LED Backlight currents available:

LED Backlight Current selection 0=open 1=linked				
LK9	LK10	LK11	LK12	Current mA
0	0	0	1	5
0	0	1	0	11
0	0	1	1	16
0	1	0	0	21
0	1	0	1	26
0	1	1	0	32
0	1	1	1	37
1	0	0	0	42
1	0	0	1	47
1	0	1	0	53
1	0	1	1	58
1	1	0	0	63
1	1	0	1	68
1	1	1	0	74
1	1	1	1	79

Solder Links on back of PCB

There are 4 solder links on the back of the PCB to set various options for the IC (Note the MCT035S 3.5" display requires +Ve edge).



Links
Pixel Clock
ST
PIX
STAG

Link	+	- (Default)
Pixel Clock	RGB Data clocked on +Ve edge	RGB Data clocked on -Ve edge
ST	High RGB Data drive strength	Low RGB Data drive strength
PIX	Two pixels per clock	One pixel per clock
STAG	Simultaneous pixel output	Staggered pixel output

Example



Raspberry Pi Application

Below is an example of the additional lines to be inserted into the config.txt file which can be used to force the Raspberry Pi Raspbian operating system to configure the HDMI output to the required resolution. (Note: # = comment)

```
# Uncomment the below line to select 3.5" 320 x 240 setup  
hdmi_timings=320 0 20 2 66 240 0 4 1 17 0 0 0 75 0 6500000 1
```

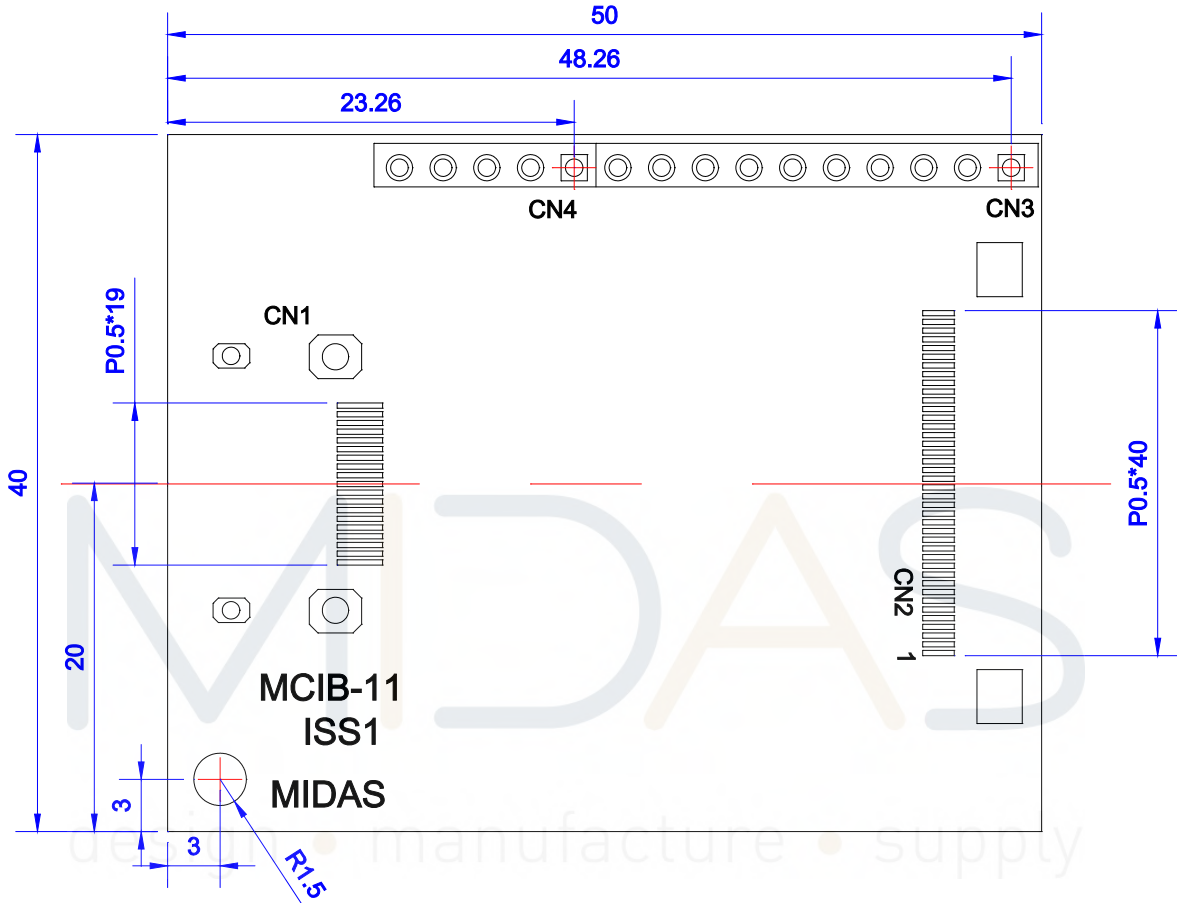
```
# Uncomment the below line to select 4.3" 480 x 272 setup  
#hdmi_timings=480 0 16 64 120 272 0 1 3 16 0 0 0 75 0 16000000 3
```

```
# Uncomment the below line to select 5.0" 800 x 480 setup  
#hdmi_timings=800 0 40 48 40 480 0 13 3 29 0 0 0 75 0 33000000 3
```

```
# Uncomment the below line to select 7" 800 x 480 setup  
#hdmi_cvt 800 480 60 6 0 0 0
```

```
config_hdmi_boost=4  
disable_overscan=1  
hdmi_group=2  
hdmi_mode=87
```

Mechanical Drawing



***Note all measurement are in mm unless stated otherwise.**

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