



HDMI INTERFACE CONTROLLER FOR MIPI PANEL

Model: MIP-1000

Part number : 41600721X-3 or up

INSTRUCTIONS

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It is essential that these instructions are read and understood before connecting or powering up this controller.

Introduction

Designed for LCD monitor and other flat panel display applications, the MIP-1000 is a feature rich interface controller for :

- **MIPI LCD panels of 2160x3840 resolutions in 30Hz with MIPI panel interface.**
- **Support true 8 bits panel**
- **Support HDMI input.**

HOW TO PROCEED

- Ensure you have all parts & that they are correct, refer to:
 - Connection diagram

Controller Solution Generator

Full web resource matching controllers & panels with **connection diagrams** for download.
See at : <http://www.digitalview.com/csg>

- Connector reference (in following section)
- Assembly notes
- Check controller switch & jumper settings (errors may damage the panel)
- Prepare the signal sources
- Connect the parts
- Understand the operation & functions

IMPORTANT USAGE NOTE

This equipment is for use by developers and integrators, the manufacturer accepts no liability for damage or injury caused by the use of this product. It is the responsibility of the developer, integrators or other user of this product to:

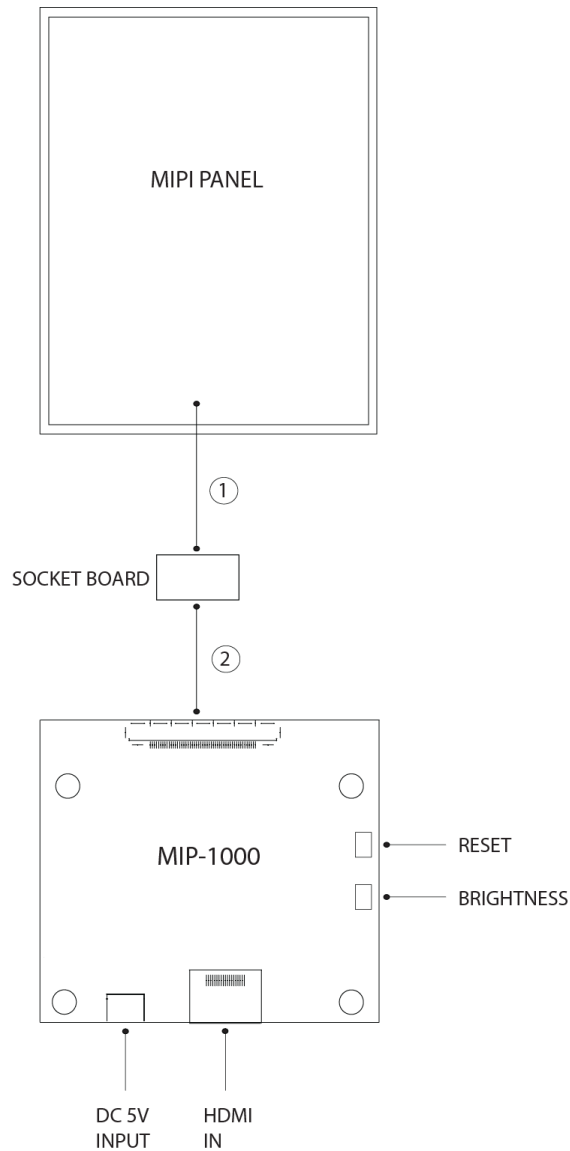
- Ensure that all necessary and appropriate safety measures are taken.
- Obtain suitable regulatory approvals as may be required.
- **Check power settings to all component parts before connection.**

DISCLAIMER

There is no implied or expressed warranty regarding this material.

SYSTEM DESIGN

A typical LCD based display system utilizing this controller is likely to comprise the following:



Cable requires for connection:

- 1. FFC cable (Socket board to Panel) : Custom made
- 2. FFC cable (MIP-1000 to socket board) : Standard

ASSEMBLY NOTES

This controller is designed for monitor and custom display projects using 2560x1600 resolution with MIPI DSI panels. The following provides some guidelines for installation and preparation of a finished display solution.

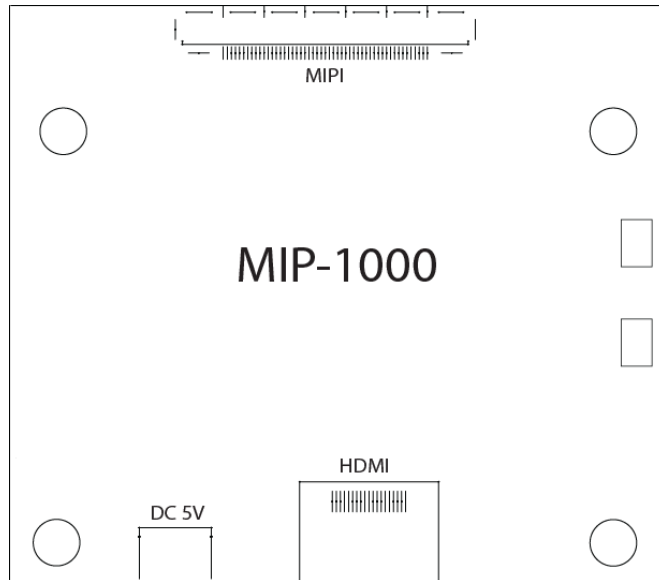
Preparation: Before proceeding it is important to familiarize yourself with the parts making up the system and the various connectors, mounting holes and general layout of the controller. As much as possible connectors have been labeled. Guides to connectors and mounting holes are shown in the following relevant sections.

1. **MIPI Panel:** This controller is designed for typical MIPI DSI interfaced panels with panel voltage 1.8V, 3.3V or 5.8V. Due to the variation between manufacturers of panels signal timing and other panel characteristics, factory setup and confirmation should be obtained before connecting to a panel.
 2. **MIP-1000:** Handle the board with care as static charge may damage electronic components.
 3. **FFC cable:** In order to provide a clean signal it is recommended that all FFC panel cables supplied by Digital View. Care should be taken when placing the cables to avoid signal interference.
 4. **HDMI input :** Plug the HDMI cable to the HDMI connector on the MIP-1000.
 5. **Power Input:** 5VDC is required, this should be a regulated supply.
- **EMI:** Shielding will be required for passing certain regulatory emissions tests. Also the choice of external Controller to PC signal cable can affect the result.
 - **Servicing:** The board is not user serviceable or repairable. Warranty does not cover user error in connecting up to the controller and is invalidated by unauthorized modification or repairs.
 - **Mounting:** It is recommended that a clearance of at least 10mm is provided above and 5mm below the controller when mounted. Additionally consideration should be given to:
 - Electrical insulation.
 - Grounding.
 - EMI shielding.
 - Cable management. Note: It is important to keep panel signal cables apart from the inverter & backlight cables to prevent signal interference.
 - Heat & Ventilation: Heat generated from other sources, for example the backlight of a very high brightness panel may generate significant heat which could adversely affect the controller.
 - Other issues that may affect safety or performance.

IMPORTANT: Please read the Application Notes section for more information.

CONNECTORS and PINOUTS

The various connectors are:



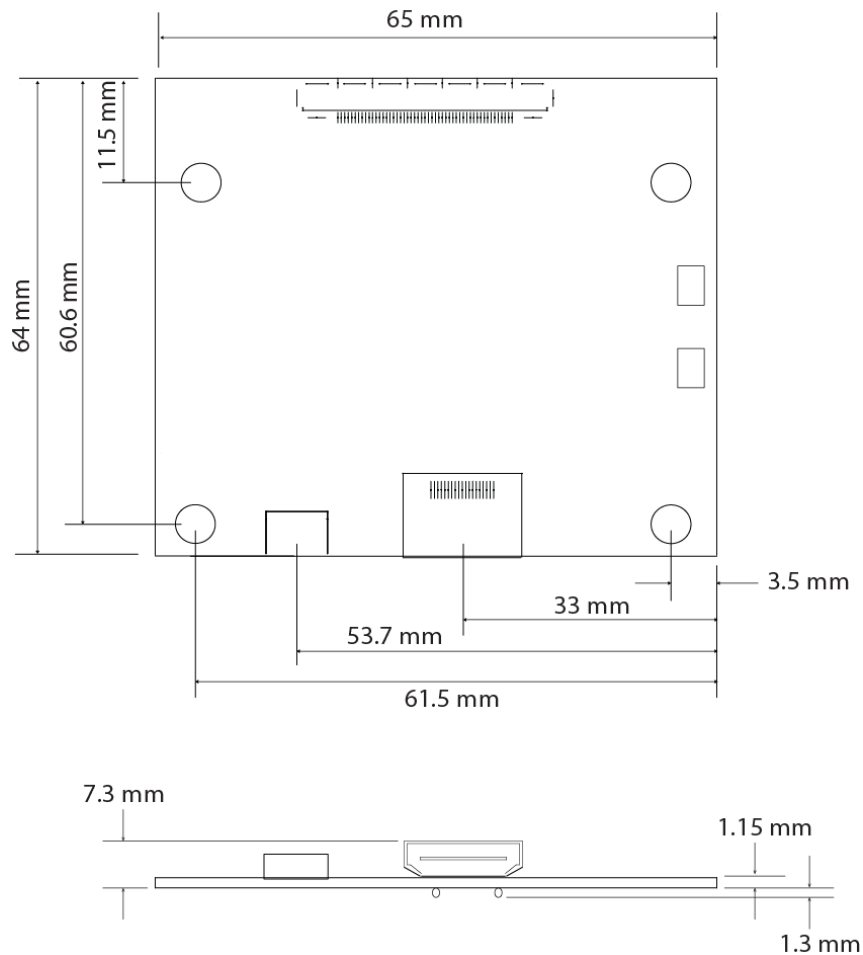
Summary: Connectors

Ref	Purpose
HDMI	HDMI input
DC 5V	Power in (Micro USB)
MIPI	Panel connection

MIPI connector:

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	DSI1_D3_N	Serial Interface 1 data-3 Low
3	DSI1_D3_P	Serial Interface 1 data-3 High
4	GND	Ground
5	DSI1_D2_N	Serial Interface 1 data-2 Low
6	DSI1_D2_P	Serial Interface 1 data-2 High
7	GND	Ground
8	DSI1_CK_N	Serial Interface 1 clock Low
9	DSI1_CK_P	Serial Interface 1 clock High
10	GND	Ground
11	DSI1_D1_N	Serial Interface 1 data-1 Low
12	DSI1_D1_P	Serial Interface 1 data-1 High
13	GND	Ground
14	DSI1_D0_N	Serial Interface 1 data-0 Low
15	DSI1_D0_P	Serial Interface 1 data-0 High
16	GND	Ground
17	DSI0_D3_N	Serial Interface 0 data-3 Low
18	DSI0_D3_P	Serial Interface 0 data-3 High
19	GND	Ground
20	DSI0_D2_N	Serial Interface 0 data-2 Low
21	DSI0_D2_P	Serial Interface 0 data-2 High
22	GND	Ground
23	DSI0_CK_N	Serial Interface 0 clock Low
24	DSI0_CK_P	Serial Interface 0 clock High
25	GND	Ground
26	DSI0_D1_N	Serial Interface 0 data-1 Low
27	DSI0_D1_P	Serial Interface 0 data-1 High
28	GND	Ground
29	DSI0_D0_N	Serial Interface 0 data-0 Low
30	DSI0_D0_P	Serial Interface 0 data-0 High
31	GND	Ground
32	NC	No connection
33	3V3_S1	3.3V S1
34	3V3_S2	3.3V S2
35	NC	No connection
36	3V3_OUT	3.3V Out
37	3V3_OUT	3.3V Out
38	NC	No connection
39	VDD18V	VDD
40	NC	No connection
41	1V8_S1	S1
42	1V8_S2	S2
43	NC	No connection
44	GND	Ground
45	NC	No connection
46	GND	Ground
47	AVDD_5V8	Power (Analog)
48	AVEE_5V8	Power (Analog)
49	GND	Ground
50	NC	No connection
51	LED_VOUT	LED Output
52	LED_VOUT	LED Output
53	LED_VOUT	LED Output
54	NC	No connection
55	LED_1	LED 1
56	LED_2	LED 2
57	GND	Ground
58	GND	Ground
59	GND	Ground
60	GND	Ground

CONTROLLER DIMENSIONS



The maximum thickness of the controller is 4mm (measured from bottom of PCB to top of components, including any underside components & leads). We recommend clearances of:

- 5mm from bottom of PCB - if mounting on a metal plate we also recommend a layer of suitable insulation material is added to the mounting plate surface.
- 10mm above the components
- 3-5mm around the edges

Any of the holes shown above can be used for mounting the PCB, they are 2.75mm in diameter.

CAUTION: Ensure adequate insulation is provided for all areas of the PCB with special attention to high voltage parts such as the inverter.

SPECIFICATIONS

Panel compatibility	Compatible with the following resolutions of panels with MIPI DSI interface. 400x400, 720x720, 800x800, 1080x1200, 1440x1440, 1440x1600, 1440x2560, 1080x1920, 1200x1920, 2560x1600, 2160x3840 A specified firmware and some factory adjustment is required for individual panel timings.
No. of colors	Up to 3 x 8 bit providing 16.7 million colors.
Panel power	DC 1.8V, 3.3V, 5.8V
Panel signal	MIPI DSI
Video inputs	HDMI 1.4
Image control	Brightness
Controller dimensions	65mm x 64mm
Input voltage	5VDC +/- 5%
Storage temperature limits	-20°C to +70°C
Operating temperature limits	0°C to +60°C

NOTES

Please note the following:

- For specific panel setup a sample of an LCD may be required (this will be returned) and a copy of the full technical specifications for the panel from the manufacturer.
- Re-layout and custom development services are available.

WARRANTY

The products are warranted against defects in workmanship and material for a period of One (1) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:

- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

CAUTION

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.

TRADEMARKS

The following are trademarks of Digital View Ltd:

- Digital View
- MIP-1000

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Revision History

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