



**POWER & INTERFACE BOARD
FOR E INK 13.3" MONOCHROME DISPLAY**

Model: EPM-050

Part number : 4160245xx-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 E Ink 13.3" monochrome display applications, the EPM-050 is a feature-rich interface controller for :

- Support E Ink 13.3" Monochrome (ED133UT3)
- Micro USB for data transfer
- Image rotation: 180 degrees
- Image mirror (horizontal flip)
- Built-in temperature sensor

The EPM-050 board is designed to enable E Ink 13.3" display systems. The EPM-050 board can be used as a power interface board between a media source, for example, the Digital View STM-100 or a Raspberry Pi, or as a main board using the optional on-board MCU. Please refer to separate user guides for content upload.

Ordering Information :

| Controller | Part number | Ordering part number |
|------------|-----------------|----------------------|
| EPM-050 | P/N 41602451x-3 | P/N 4160245xx-3 |

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 the following section)
 - 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.
- **Verify the power settings for all components before making connections.**

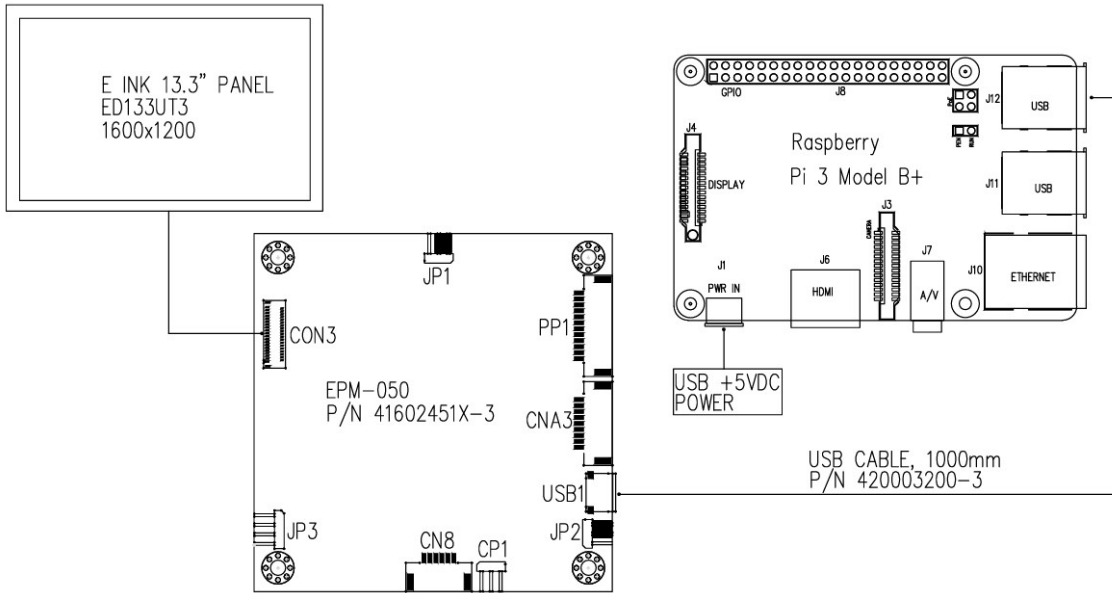
DISCLAIMER

There is no implied or expressed warranty regarding this material.

SYSTEM DESIGN

A typical E Ink 13.3" display system utilizing the EPM-050 is likely to comprise the following:

E Ink 13.3" mono display for 5VDC input.

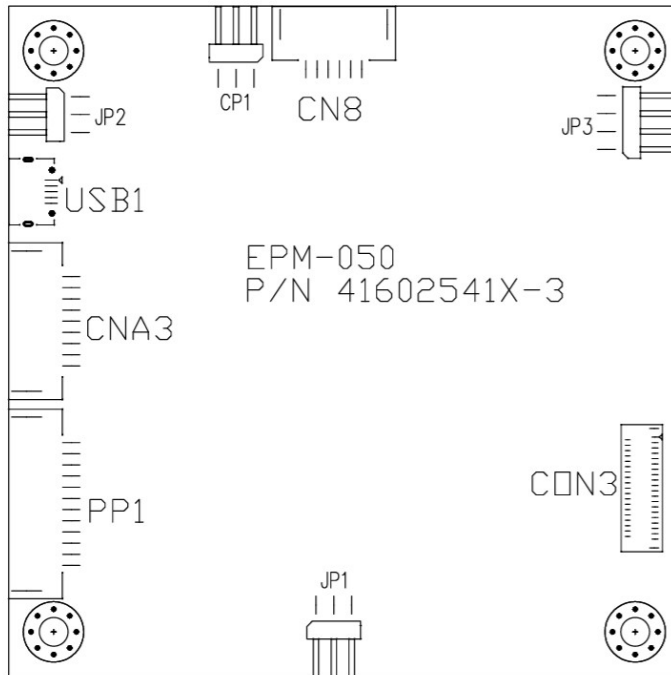


FEATURES

1. Panel Support: E Ink 13.3" mono (ED133UT3)
2. Supports resolution: 1600x1200 (for 13.3")
3. Image rotation: 180 degree
4. Supports image mirror (Horizontal flip)
5. 1x Micro USB connector
6. Built-in temperature sensor
7. Supports Bitmap file format
8. Reserve RS-232 command to control +5V output power on/off for power saving purpose for 12V input only.
9. Reserve +5V output supply for external device such as Raspberry Pi etc for 12V input only.
10. Input voltage : 5V (default) / 12V (Jumper selectable)
11. Output voltage: DC 5V for 12V input only (for STM-100, Raspberry Pi etc)
12. Supports Raspberry Pi, Arduino, Android, SBC
13. Board size : 75 x 75 mm
14. Operating temperature : -15°C to +65°C (based on chamber temperature tests)
15. Power consumption for Standby (as measured)
12VDC input : 13.3" mono panel + EPM-050 = 0.42W
5VDC input : 13.3" mono panel + EPM-050 = 0.27W
16. Power consumption during image write to panel (as measured)
12VDC input : 13.3" mono panel + EPM-050 = 1.5W
5VDC input : 13.3" mono panel + EPM-050 = 0.51W

CONNECTORS, PINOUTS & JUMPERS

The various connectors are:



Summary: Connectors

| Ref | Purpose | Description |
|------|---|--|
| CON3 | Panel output signal for Eink 13.3" panel | JST 39FXRH-SM1-GAN-TF (Matching type : Copper foil 0.3mm pitch) |
| CN8 | RS-232 serial control | 12513WR-06 or compatible (Matching type : Molex 51146-0600 or compatible) (Matching RS-232 extend cable P/N 426092400-3 (100mm)) |
| CNA3 | +5VDC power output (applied when input 12VDC via PP1) | 12513WR-09 or compatible (Matching type : Molex 51146-0900 or compatible) |
| PP1 | +12VDC Power input | 12513WR-12 or compatible (Matching type : Molex 51146-1200 or compatible) (Matching power extend cable P/N 426019600-3 (300mm)) |
| USB1 | +5V power input & Data | Micro USB connector (Matching USB cable P/N 420003200-3 (1000mm)) |

Summary: Jumpers setting

| Ref | Purpose | Note |
|------------|--|--|
| JP1 | Selection of on board +5VDC power control | 1-2 = Always On 2-3 = Command control power On/Off |
| JP2 | Selection of +5VDC or +12VDC input | 1-2 = +12VDC input via PP1 2-3 = +5VDC input via USB1 |
| JP3 | Selection of RS-232 input or UART input for on board +5VDC power control | 1-2 & 3-4 open = RS-232 input 1-2 & 3-4 closed = UART input |
| CP1 | U3 Programming Port | Pin 1 = +5V Pin 2 = Ground Pin 3 = Data |

CON3 – Panel output signal for Eink 13.3" panel : JST 39FXRH-SM1-GAN-TF (Matching type : : Copper foil 0.3mm pitch)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|-------------------------------------|
| 1 | VNEG | Negative power supply source driver |
| 2 | VPOS | Positive power supply source driver |
| 3 | VSS | Ground |
| 4 | VDD | Digital power supply drivers |
| 5 | XCL | Clock source driver |
| 6 | XLE | Latch enable source driver |
| 7 | XOE | Output enable source driver |
| 8 | VSS | Ground |
| 9 | VSS | Ground |
| 10 | NC | No Connection |
| 11 | XSTL | Start pulse source driver |
| 12 | D0 | Data signal source driver |
| 13 | D1 | Data signal source driver |
| 14 | D2 | Data signal source driver |
| 15 | D3 | Data signal source driver |
| 16 | D4 | Data signal source driver |
| 17 | D5 | Data signal source driver |
| 18 | D6 | Data signal source driver |
| 19 | D7 | Data signal source driver |
| 20 | VSS | Ground |
| 21 | NC | No Connection |
| 22 | VCOM | Common connection |
| 23 | VGH | Positive power supply gate driver |
| 24 | VGL | Negative power supply gate driver |
| 25 | NC | No Connection |
| 26 | NC | No Connection |
| 27 | NC | No Connection |
| 28 | MODE1 | Output mode selection gate driver |
| 29 | VSS | Ground |
| 30 | VSS | Ground |
| 31 | VSS | Ground |
| 32 | SPV | Start pulse gate driver |
| 33 | CKV | Clock gate driver |
| 34 | BORDER | Border connection |
| 35 | VSS | Ground |
| 36 | VSS | Ground |
| 37 | VSS | Ground |
| 38 | VSS | Ground |
| 39 | VSS | Ground |

CN8 – RS-232 serial control: YEONHO 12513WR-06 compatible

(Matching type : Molex 51146-0600 or compatible)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|----------------|
| 1 | PI TX | UART Tx data |
| 2 | PI RX | UART Rx data |
| 3 | VCC | +5V |
| 4 | TX0IN | RS-232 Tx data |
| 5 | GND | Ground |
| 6 | RX0IN | RS-232 Rx data |

CNA3 - +5VDC power output : YEOHO 12513WR-09 or compatible (applied when input 12VDC via PP1)

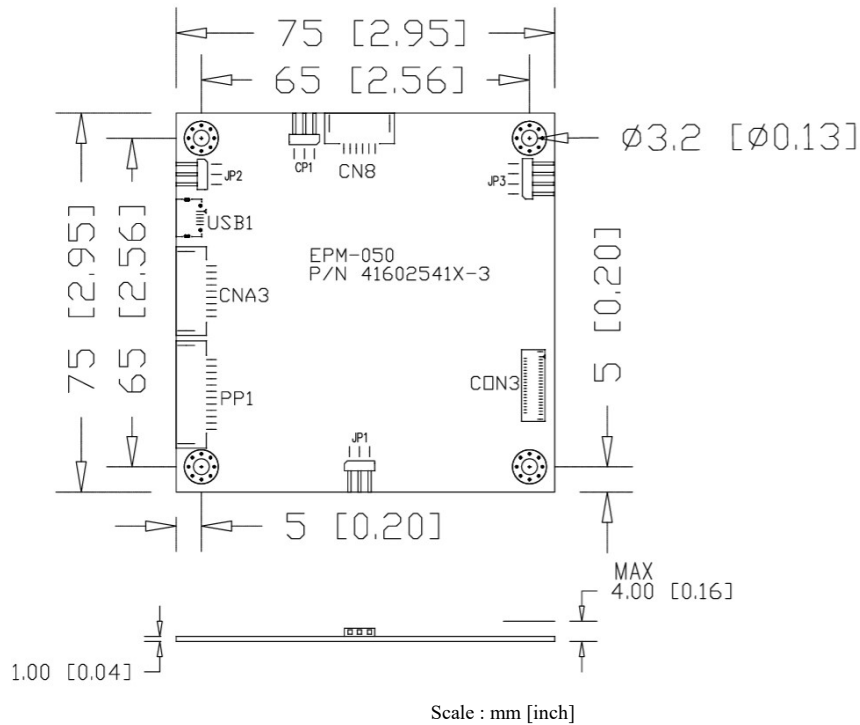
(Matching type : Molex 51146-0900 or compatible)

| PIN | SYMBOL | DESCRIPTION |
|-----|--------|-----------------------|
| 1 | +12VDC | +12VDC out (Reserved) |
| 2 | +12VDC | +12VDC out (Reserved) |
| 3 | +12VDC | +12VDC out (Reserved) |
| 4 | GND | Ground |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | +5VDC | +5VDC out |
| 8 | +5VDC | +5VDC out |
| 9 | +5VDC | +5VDC out |

PP1 - +12VDC Power input : 12513WR-12 or compatible (Matching type : Molex 51146-1200 or compatible)

| PIN | SYMBOL | DESCRIPTION |
|------------|---------------|--------------------|
| 1 | VDD (+12V) | +12V in |
| 2 | VDD (+12V) | +12V in |
| 3 | VDD (+12V) | +12V in |
| 4 | VDD (+12V) | +12V in |
| 5 | VDD (+12V) | +12V in |
| 6 | VDD (+12V) | +12V in |
| 7 | GND | Ground |
| 8 | GND | Ground |
| 9 | GND | Ground |
| 10 | GND | Ground |
| 11 | GND | Ground |
| 12 | GND | Ground |

CONTROLLER DIMENSIONS



Ready-made 3D Pro-E (SLDPRT) drawing files - Save time and effort for your system volumetric analysis design. Includes jpg file previews. Please go to download at <https://www.digitalview.com/controllers/epm-050-driver.html>

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

WARRANTY

The products are warranted against defects in workmanship and material for a period of three (3) 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
- EPM-050

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Revision History

| Date | Rev No. | Page | Summary |
|-------------|---------|------|--------------|
| 26 Aug 2024 | 1.00 | All | First issued |
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