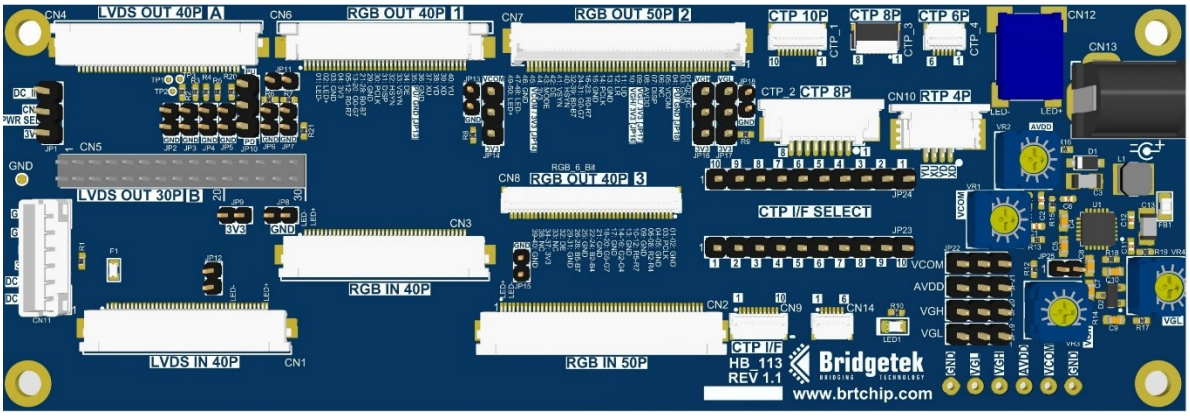
VA-1001-01A

Datasheet



Document Reference #	Document Version #	Issue Date	Clearance #
BRT_000481	1.1	14-10-2026	BRT#268

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. Bridgetek Pte Ltd will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device, or system in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Bridgetek Pte Ltd, 1 Tai Seng Avenue, #03-05, Singapore 4536464. Singapore Registered Company Number: 201542387H.

Bridgetek Pte Ltd (BRTChip)
1 Tai Seng Avenue, Tower A, #03-05, Singapore 536464
Tel: +65 6547 4827
Web Site: https://brtchip.com/
Copyright © Bridgetek Pte Ltd

Table of Contents

1 Introduction 4
1.1 Features 4
2 Part Numbers / Ordering Information 5
3 Hardware Features 6
3.1 VA-1001-01A PCBA Overview 6
3.1.1 Key Features 6
3.2 Physical Overview 7
3.2.1 PCB Layout 7
3.2.2 Connectors and Jumpers 7
4 Board Schematics 15
5 Hardware Configuration 19
5.1 Power Supply 20
5.1.1 System Power Supply 20
5.1.2 External Power Input Connector 20
5.1.3 LCD Bias-Voltage Regulator 20
5.1.4 LED Backlight Power Supply 20
5.1.5 External Power Output Connector 20
5.2 Display Input Interfaces 20
5.2.1 LVDS Input Interface 20
5.2.2 RGB Input Interface 21
5.3 Display Output Interfaces 21
5.3.1 LVDS Output Interface 21
5.3.2 RGB Output Interface 22
5.4 Touch-Panel Interfaces 23
5.4.1 Capacitive Touch Interface 23
5.4.2 Resistive Touch Interface 23
5.5 Jumper Configuration 23
5.5.1 LVDS Output Connector A Pin Configuration 23
5.5.2 LVDS Output Connector B Power Selection 24
5.5.3 RGB Output Connector 1 Pin Configuration 24
5.5.4 RGB Output Connector 2 Pin Configuration 24
5.5.5 LCD Bias-Voltage Source Selection 25
5.5.6 Capacitive Touch-Signal Connections 25
5.6 PCB Functional Overview 26
6 Generic LCD Adaptor Board Configuration and Operation 27
6.1 Verifying LCD Panel Compatibility 27
6.1.1 LVDS Panel Compatibility Check 27
6.1.2 RGB Panel Compatibility Check 29
6.2 Adjusting the LCD Bias Voltages 33
6.2.1 Selecting the LCD Bias-Voltage Source 33
6.2.2 Adjusting the Bias-Voltage Levels 34
6.2.3 Configuring the ME817EV TPS65145 for Doubler Mode 34

Copyright © Bridgetek Pte Ltd

6.3 Configuring Pin States 35
6.4 Connecting LCD Panels to EVE Evaluation Board via the Adapter Board 35
6.4.1 Connecting LVDS LCD Panel to the ME817EV Evaluation Board 35
6.4.2 Connecting an RGB LCD Panel to the ME817EV Evaluation Board 37
6.5 Connecting Capacitive Touch Panel to EVE Evaluation Board via the 39
Adapter Board 39
6.5.1 EVE Evaluation Board Interface 39
6.5.2 LCD Module CTP Interface 40
6.5.3 CTP Signal Routing 40
6.5.4 CTP Extension Cable 41

7 Examples 43

7.1 Example 1: Connecting an LVDS Panel via Connector A 45
7.2 Example 2: Connecting an LVDS Panel via Connector B 46
7.3 Example 3: Connecting an RGB Panel via Connector 1 47
7.4 Example 4: Connecting an RGB Panel via Connector 2 48
7.5 Example 5: Connecting an RGB Panel via Connector 3 49
7.6 Example 6: Using the VM816CU50A as the Input Source 50
7.7 Example 7: Using the IDM2040-7A as the Input Source 51

8 Electrical Specifications 52

9 Mechanical Dimensions 53

10 Software Setup Information 54

10.1 Operating Example 54

11 Disclaimer Notice: Use of Third-Party Software or Websites 58

12 Contact Information 59

Appendix A - References 60

Document References 60
Acronyms and Abbreviations 60

Appendix B - List of Figures and Tables 61

List of Figures 61
List of Tables 62

Appendix C - Revision History 63

Copyright © Bridgetek Pte Ltd

1 Introduction

The **VA-1001-01A Generic LCD Adaptor Board** provides a versatile interface between Bridgetek EVE evaluation modules and a wide range of commercially available LCD panels.

To ensure broad compatibility, LCD panels from multiple manufacturers—including both RGB and LVDS models—were carefully evaluated. The findings were used to define generic LCD pin interfaces that support most commonly available panels.

The adaptor board is compatible with a wide range of Bridgetek EVE evaluation boards featuring devices from the **FT80X, BT81X, and BT88X** series.

Its flexible design simplifies LCD panel evaluation and prototyping, helping developers reduce design complexity and accelerate product development.

1.1 Features

- Compatible with the **ME817EV** **BT817 Customer Evaluation Board** for RGB and LVDS LCD panels.
- Compatible with **VM8xx-series EVE modules**—VM800C43A, VM800B43A/50A, VM810C50A, VM880C, VM816C50A, and VM816CU50A—for RGB LCD panels.
- Supports LVDS LCD panels with generic pin configurations.
- Supports RGB LCD panels with generic pin configurations.
- Supports both capacitive and resistive touch panels.
- Features an onboard, controllable LCD-bias voltage regulator.
- Includes an LED-backlight connector capable of driving LCD-module backlights up to 10 inches.
- Provides a DC power jack for powering LCD panels with integrated LED drivers.
- Rev 1.1: Introduces selectable doubler and tripler charge-pump modes for the LCD bias voltage regulator, providing greater flexibility to accommodate different LCD bias voltage requirements
- Rev 1.1: Adds a 6-position FPC connector for interfacing with EVE development boards and enhances the capacitive touch panel (CTP) interface with flexible signal routing to accommodate different CTP input pin configurations.

Copyright © Bridgetek Pte Ltd

2 Part Numbers / Ordering Information

Part #	Part Name / Description
VA-1001-01A	• Generic LCD Adapter Board for EVE modules. • 6 Position FFC FPC Cable 0.5mm pitch, 150mm (L), top contact on both ends. • 10 Position FFC FPC Cable 0.5mm pitch, 50mm (L), top contact on both ends. • 40 Position FFC FPC Cable 0.5mm pitch, 50mm (L), top contact on both ends. • 50 Position FFC FPC Cable 0.5mm pitch, 100mm (L), top contact on both ends. • 40 Position FFC FPC Cable 0.5mm pitch, 150mm (L), top contact on both ends. • 40 Position FFC FPC Cable 0.5mm pitch, 150mm (L), top contact on one end and bottom contact on the other. • 50 Position FFC FPC Cable 0.5mm pitch, 150mm (L), top contact on both ends. • 50 Position FFC FPC Cable 0.5mm pitch, 150mm (L), top contact on one end and bottom contact on the other. • 10P Jumper Wire, 2.54 mm pitch, Female-to-Female, 10 cm

Table 1 - Part Numbers / Ordering Information

Copyright © Bridgetek Pte Ltd

3 Hardware Features

3.1 VA-1001-01A PCBA Overview

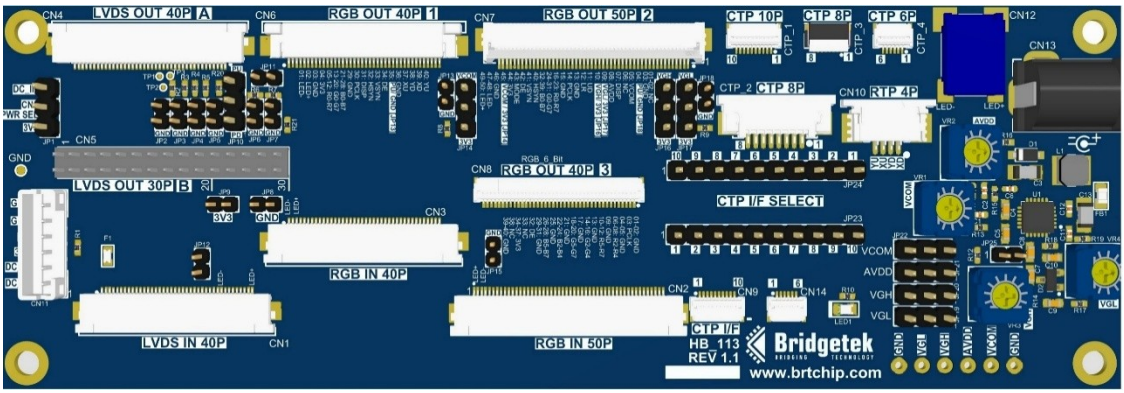


Figure 1 - VA-1001-01A PCBA – Front View

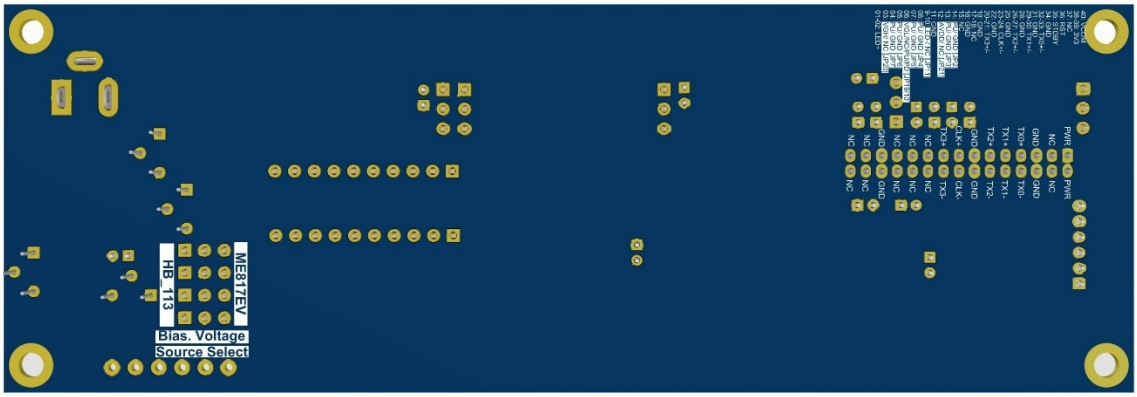


Figure 2 - VA-1001-01A PCBA – Back View

3.1.1 Key Features

LVDS LCD Interface:

- A 40-pin FPC connector supports the ME817EV's single-channel, four-data-lane LVDS output.
- A second 40-pin FPC connector features a standard pinout, adjustable bias voltage, and signal conditioning.
- A 30-pin (2 × 15) header with a standard pin assignment supports panels fitted with 20-pin or 30-pin connector housings.

RGB LCD Interface:

- A 50-pin FPC connector supports the ME817EV's 24-bit RGB output.
- A 40-pin FPC connector supports the 24-bit RGB output of VM8xx-series EVE evaluation boards.
- A 40-pin FPC connector provides a standard 24-bit RGB pinout.
- A 50-pin FPC connector provides a standard 24-bit RGB pinout, adjustable bias voltage, and signal conditioning.
- A 40-pin FPC connector provides a standard 18-bit RGB pinout.

Touch Interface:

- A 10-pin FPC connector provides an I²C interface to the EVE device for touch-panel control.
- A 0.5 mm-pitch FPC connector, available in 6-, 8-, and 10-pin configurations, supports the I²C interface from a capacitive touch panel (CTP).

Copyright © Bridgetek Pte Ltd

- An 8-pin, 1 mm-pitch FPC connector supports the I²C interface from a capacitive touch panel (CTP).
- A 4-pin, 1 mm-pitch FPC connector supports analog input from a resistive touch panel (RTP).

I/O Power and Regulator:

- A 2.1 mm DC power jack accepts an external supply for powering LED drivers and LVDS receivers.
- An adjustable voltage regulator provides the required LCD bias voltage.
- A 6-pin power-output connector supplies power to LED drivers.
- A 2-pin power-output connector supplies power to the LED backlight.

3.2 Physical Overview

3.2.1 PCB Layout

The VA-1001-01A is a two-layer FR-4 PCB with components mounted on one side. It measures 145.5 mm (L) × 50 mm (W) × 1.6 mm (T) and features 100 Ω controlled-impedance LVDS transmission traces.

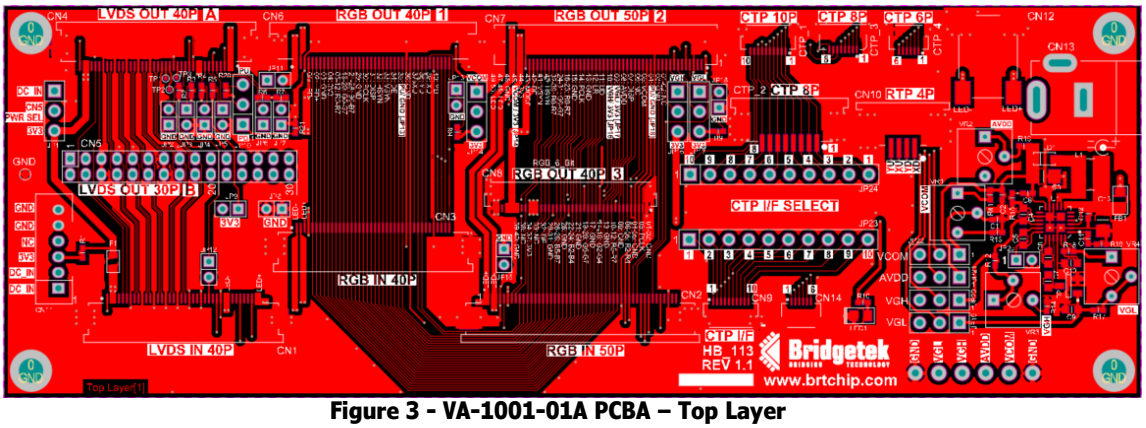


Figure 3 - VA-1001-01A PCBA – Top Layer

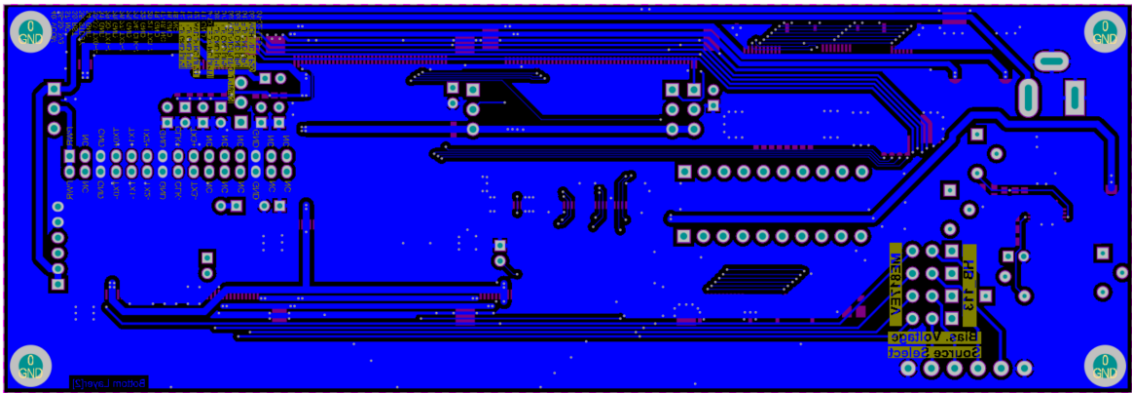


Figure 4 - VA-1001-01A PCBA – Bottom Layer

3.2.2 Connectors and Jumpers

The following section provides details about the connectors and jumpers.

- **CN1 – LVDS Interface Connector to ME817EV**
  40-pin, 0.5 mm pitch top contact FPC connector.

Pin No.	Name	Type	Description
1	VCOM	P	Common voltage
2 - 3	D3V3	P	3.3V output power supply
4	NC	-	No connection

Copyright © Bridgetek Pte Ltd

5	RST	I	Reset output to LCD panel
6	STDBY	I	Standby control output for LCD panel, 10KΩ pull-up to 3V3
7	GND	P	Ground
8	TX0_N	I	LVDS TX data bit 0 differential N signal
9	TX0_P	I	LVDS TX data bit 0 differential P signal
10	GND	P	Ground
11	TX1_N	I	LVDS TX data bit 1 differential N signal
12	TX1_P	I	LVDS TX data bit 1 differential P signal
13	GND	P	Ground
14	TX2_N	I	LVDS TX data bit 2 differential N signal
15	TX2_P	I	LVDS TX data bit 2 differential P signal
16	GND	P	Ground
17	TXCLK_N	I	LVDS TX clock differential N signal
18	TXCLK_P	I	LVDS TX clock differential P signal
19	GND	P	Ground
20	TX3_N	I	LVDS TX data bit 3 differential N signal
21	TX3_P	I	LVDS TX data bit 3 differential P signal
22	GND	P	Ground
23	NC	-	No connection
24	NC	-	No connection
25	GND	P	Ground
26	NC	-	No connection
27	BL_PWM	I	Blacklight controller signal output
28	NC	-	No connection
29	AVDD	P	Power for analog circuit
30	GND	P	Ground
31	LEDK	P	Power for LED backlight (Cathode)
32	LEDK	P	Power for LED backlight (Cathode)
33	NC	-	No connection
34	NC	-	No connection
35	VGL	P	Negative power for TFT
36	NC	-	No connection
37	NC	-	No connection
38	VGH	P	Positive power for TFT
39 - 40	LEDA	P	Power for LED backlight (Anode)

Table 2 - CN1 Pinout

- **CN2 – RGB Interface Connector to ME817EV**
  50-pin, 0.5 mm pitch top contact FPC connector.

Pin No.	Name	Type	Description
1 - 2	LEDA	P	Power for LED backlight (Anode)
3 - 4	LEDK	P	Power for LED backlight (Cathode)
5	GND	P	Ground
6	VCOM	P	Common voltage
7	D3V3	P	Power for digital circuit, 3.3V
8	MODE	I	Logic High, 10KΩ pull-up to 3V3
9	DE	I	Data Enable
10	VSYNC	I	Vertical Sync
11	HSYNC	I	Horizontal Sync
12 - 19	B7 – B0	I	RGB Blue data
20 - 27	G7 – G0	I	RGB Green data
28 - 34	R7 – R0	I	RGB Red data
36	GND	P	Ground
37	PCLK	I	Pixel clock

Copyright © Bridgetek Pte Ltd

38	GND	P	Ground
39	L/R	I	Left/Right selection, 0Ω pull-up to 3V3
40	U/D	I	Up/Down selection, 0Ω pull-down to ground
41	VGH	P	Gate ON Voltage
42	VGL	P	Gate OFF Voltage
43	AVDD	P	Power for analog circuits
44	DISP	I	LCD Enable
45	NC	-	No connection
46	VCOM	P	Common voltage
47	NC	-	No connection
48	GND	P	Ground
49 - 50	NC	-	No connection

Table 3 - CN2 Pinout

- **CN3 – RGB Interface Connector to VM816X/ VM88X Evaluation Boards**
  40-pin, 0.5 mm pitch top contact FPC connector.

Pin No.	Name	Type	Description
1	LEDK	P	Power for LED backlight (Cathode)
2	LEDA	P	Power for LED backlight (Anode)
3	GND	P	Ground
4	D3V3	P	Power for digital circuit, 3.3V
5 - 12	R0 – R7	I	RGB Red data
13 - 20	G0 – G7	I	RGB Green data
21 - 28	B0 – B7	I	RGB Blue data
29	GND	P	Ground
30	PCLK	I	Pixel clock
31	DISP	I	LCD Enable
32	HSYNC	I	Horizontal Sync
33	VSYNC	I	Vertical Sync
34	DE	I	Data Enable
35	NC	-	No connection
36	GND	P	Ground
37	XU	O	Resistive touch panel X up
38	YD	O	Resistive touch panel Y down
39	XD	O	Resistive touch panel X down
40	YU	O	Resistive touch panel Y up

Table 4 - CN3 Pinout

- **CN4 – LVDS Output, Connector (A)**
  40-pin, 0.5 mm pitch top contact FPC connector.

Pin No.	Name	Type	Description
1 -2	LEDA	P	Power for LED backlight (Anode).
3	VGH	P	Positive power for TFT, with option to disconnect.
4	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.
5	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.
6	VGL	P	Negative power for TFT, with option to (1) disconnect, (2) pull-up to 3V3 and (3) pull-down to ground.
7	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.
8	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.
9 - 10	LEDK	P	Power for LED backlight (Cathode), with option to disconnect
11	GND	P	Ground
12	AVDD	P	Power for analog circuit, with option to disconnect.
13	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.

Copyright © Bridgetek Pte Ltd

14	-	O	10 kΩ pull-up to 3V3, with option to (1) connect to ground and (2) disconnect.
15	NC	-	No connection
16	GND	P	Ground
17 - 18	NC	-	No connection
19	GND	P	Ground
20	TX3_P	O	LVDS TX data bit 3 differential P signal
21	TX3_N	O	LVDS TX data bit 3 differential N signal
22	GND	P	Ground
23	TXCLK_P	O	LVDS TX clock differential P signal
24	TXCLK_N	O	LVDS TX clock differential N signal
25	GND	P	Ground
26	TX2_P	O	LVDS TX data bit 2 differential P signal
27	TX2_N	O	LVDS TX data bit 2 differential N signal
28	GND	P	Ground
29	TX1_P	O	LVDS TX data bit 1 differential P signal
30	TX1_N	O	LVDS TX data bit 1 differential N signal
31	GND	P	Ground
32	TX0_P	O	LVDS TX data bit 0 differential P signal
33	TX0_N	O	LVDS TX data bit 0 differential N signal
34	GND	P	Ground
35	STDBY	O	Standby control output for LCD panel, 10KΩ pull-up to 3V3
36	RST	O	Reset output to LCD panel
37	NC	-	No connection
38 - 39	D3V3	P	3.3V output power supply
40	VCOM	P	Common voltage, with option to disconnect.

Table 5 - CN4 Pinout

- **CN5 – LVDS Output, Connector (B)**
  30-pin, 2 mm pitch dual row header.

Pin No.	Name	Type	Description
1 - 2	-	P	Power supply for connected device, selectable from either (1) DC jack or (2) 3V3.
3	NC	-	No connection
4	NC	-	No connection
5 - 6	GND	P	Ground
7	TX0_P	O	LVDS TX data bit 0 differential P signal
8	TX0_N	O	LVDS TX data bit 0 differential N signal
9	TX1_P	O	LVDS TX data bit 1 differential P signal
10	TX1_N	O	LVDS TX data bit 1 differential N signal
11	TX2_P	O	LVDS TX data bit 2 differential P signal
12	TX2_N	O	LVDS TX data bit 2 differential N signal
13 - 14	GND	P	Ground
15	TXCLK_P	O	LVDS TX clock differential P signal
16	TXCLK_N	O	LVDS TX clock differential N signal
17	TX3_P	O	LVDS TX data bit 3 differential P signal
18	TX3_N	O	LVDS TX data bit 3 differential N signal
19 - 24	NC	-	No connection
25 - 26	GND	P	Ground
27 - 30	NC	-	No connection

Table 6 - CN5 Pinout

Copyright © Bridgetek Pte Ltd

- **CN6 – RGB Output, Connector (1)**
  40-pin, 0.5 mm pitch top contact FPC connector.

Pin No.	Name	Type	Description
1	LEDK	P	Power for LED backlight (Cathode)
2	LEDA	P	Power for LED backlight (Anode)
3	GND	P	Ground
4	D3V3	P	Power for digital circuit, 3.3V
5 - 12	R0 - R7	O	RGB Red data
13 - 20	G0 – G7	O	RGB Green data
21 - 28	B0 – B7	O	RGB Blue data
29	GND	P	Ground
30	PCLK	O	Pixel clock
31	DISP	O	LCD Enable
32	HSYNC	O	Horizontal Sync
33	VSYNC	O	Vertical Sync
34	DE	O	Data Enable
35	-	-	10 kΩ pull-up to 3V3, with option to connect to ground.
36	GND	P	Ground
37	XU	I	Resistive touch panel X up
38	YD	I	Resistive touch panel Y down
39	XD	I	Resistive touch panel X down
40	YU	I	Resistive touch panel Y up

Table 7 - CN6 Pinout

- **CN7 – RGB Output, Connector (2)**
  50-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 2	NC	-	No connection
3	GND	P	Ground
4	-	O	10 kΩ pull-up to 3V3, with option to connect to ground.
5	VCOM	P	Biasing voltage for LCD with option to disconnect.
6	NC	-	No connection
7	DISP	O	LCD Enable
8	AVDD	P	Biasing voltage for LCD with option to disconnect.
9	-	P	Biasing voltage for LCD, selectable from either (1) VGL, (2) 3V3.or (3) left open.
10	-	P	Biasing voltage for LCD, selectable from either (1) VGH, (2) 3V3.or (3) left open.
11	UD	O	Grounded via 0Ω on ME817EV.
12	LR	O	Connected to 3V3 via 0Ω on ME817EV.
13	GND	P	Ground
14	PCLK	O	Pixel clock
15	GND	P	Ground
16 - 23	R0 - R7	O	RGB Red data
24 - 31	G7 – G0	O	RGB Green data
32 - 39	B7 – B0	O	RGB Blue data
40	HSYNC	O	Horizontal Sync
41	VSYNC	O	Vertical Sync
42	DE	O	Data Enable
43	MODE	O	10 kΩ pull-up to 3V3, with option to connect to ground.
44	D3V3	P	Power for digital circuit, 3.3V
45	-	P	Biasing voltage for LCD, selectable from either (1) VCOM, (2) 3V3.or (3) left open

Copyright © Bridgetek Pte Ltd

46	GND	P	Ground
47 - 48	LEDK	P	Power for LED backlight (Cathode)
49 – 50	LEDA	P	Power for LED backlight (Anode)

Table 8 - CN7 Pinout

- **CN8 – RGB Output, Connector (3)**
  40-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 2	GND	P	Ground
3	PCLK	O	Pixel clock
4 - 5	GND	P	Ground
6 - 8	R2 – R4	O	RGB Red data
9	GND	P	Ground
10 - 12	R5 – R7	O	RGB Red data
13	GND	P	Ground
14 - 16	G2 – G4	O	RGB Green data
17	GND	P	Ground
18 - 20	G5 – G7	O	RGB Green data
21	GND	P	Ground
22 - 24	B2 – B4	O	RGB Blue data
25	GND	P	Ground
26 - 28	B5 – B7	O	RGB Blue data
29 - 31	GND	P	Ground
32	DE	O	Data Enable
33	NC	-	No connection
34 - 37	D3V3	P	Power for digital circuit, 3.3V
38	NC	-	No connection
39 - 40	GND	P	Ground

Table 9 - CN8 Pinout

- **CN9 – Touch Interface Connector to EVE Development Boards**
  10-pin, 0.5 mm pitch top and bottom contact FPC connector.

PCB Rev 1.1

Pin No.	Name	Type	Description
1-10	-	I/O	Connected to pins 1–10 of the JP23 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 10 to Pin 10).

Table 10 - CN9 Pinout

PCB Rev 1.0

Pin No.	Name	Type	Description
1	D3V3	P	3.3V power supply
2	GND	P	Ground
3	CTP_SDA	I/O	I2C SDA line
4	CTP_SCL	I/O	I2C SCL line
5	CTP_INT	O	Touch interrupt input
6	CTP_RST	I	Touch reset output
7 - 10	NC	-	No connection

Table 11 - CN9 Pinout

Copyright © Bridgetek Pte Ltd

- **CN10 – Touch Input Connector**
  4-pin, 1 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1	XD	I	Resistive touch panel X down
2	YD	I	Resistive touch panel Y down
3	XU	I	Resistive touch panel X up
4	YU	I	Resistive touch panel Y up

Table 12 - CN10 Pinout

- **CN11 –Output Power Connector**
  6-pin, 2 mm pitch header.

Pin No.	Name	Type	Description
1 - 2	DC_IN	P	Power Supply for LED drivers.
3	-	O	10 kΩ pull-up to 3V3.
4	NC	-	No connection
5 - 6	GND	P	Ground

Table 13 - CN11 Pinout

- **CN12 – LED Backlight Connector**
  2-pin, 3.5 mm pitch connector.

Pin No.	Name	Type	Description
1	LEDA	P	Power for LED backlight (Anode)
2	LEDK	P	Power for LED backlight (Cathode)

Table 14 - CN12 Pinout

- **CN13 – Input Power Source**

  This 2.1mm DC power jack accepts power input to the board providing supply to output power connector and LVDS output header.

- **CN14 – Touch Interface Connector to EVE Development Boards**
  6-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 6	-	I/O	Connected to pins 1–6 of the JP23 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 6 to Pin 6).

Table 15 - CN14 Pinout

- **CTP_1 – Touch Interface Connector to LCD Modules**
  10-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 10	-	I/O	Connected to pins 1–10 of the JP24 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 10 to Pin 10).

Table 16 - CTP_1 Pinout

- **CTP_2 – Touch Interface Connector to LCD Modules**
  8-pin, 1 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 8	-	I/O	Connected to pins 1–8 of the JP24 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 8 to Pin 8).

Table 17 - CTP_2 Pinout

Copyright © Bridgetek Pte Ltd

- **CTP_3 – Touch Interface Connector to LCD Modules**
  8-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 8	-	I/O	Connected to pins 1–8 of the JP24 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 8 to Pin 8).

Table 18 - CTP_3 Pinout

- **CTP_4 – Touch Interface Connector to LCD Modules**
  6-pin, 0.5 mm pitch top and bottom contact FPC connector.

Pin No.	Name	Type	Description
1 - 6	-	I/O	Connected to pins 1–6 of the JP24 jumper header, with a one-to-one sequential pin mapping (Pin 1 to Pin 1 through Pin 6 to Pin 6).

Table 19 - CTP_4 Pinout

- **JP1 – Connector B Output Power Source Select**
  JP1 enables selection of the power source for connected devices, connected to connector B.

- **JP2 – JP12 – Connector A Signal State Configuration**
  JP2–JP7, together with JP10-JP12, configure the bias voltage and signal states for devices connected to Connector A. JP8 provides extra ground pins for connections requiring logic low, while JP9 offers additional logic high pins.

- **JP13 Connector 1 Signal State Configuration**
  JP13 allows signal state configuration on connector 1.

- **JP14 – JP18 – Connector 2 Signal State Configuration**
  JP14 – JP18 allows signal state configuration on connector 2.

- **JP19 – JP22 – Biasing Voltage Source Selection**
  JP19 – JP22 allows selection of the bias voltage source for LCD panels, either from the ME817EV or the adaptor board.

- **JP23 – JP24 – Capacitive Touch Pin Connection**
  JP23 and JP24 headers enable routing of capacitive touch signals from touch panels, connecting them to power, ground, and EVE I²C control interface.

- **JP25 – Doubler/ Tripler Mode Selection**
  JP25 allows mode selection for onboard LCD Power Supply Regulator TPS65145.

JP25	Name
Open (Default)	Tripler Mode
Short	Doubler Mode

Table 20 - LCD Power Supply Regulator Mode Selection

Note: Refer to Section 5.5 "Jumper Configuration" for a detailed explanation of settings for the jumper configuration.

Copyright © Bridgetek Pte Ltd

4 Board Schematics

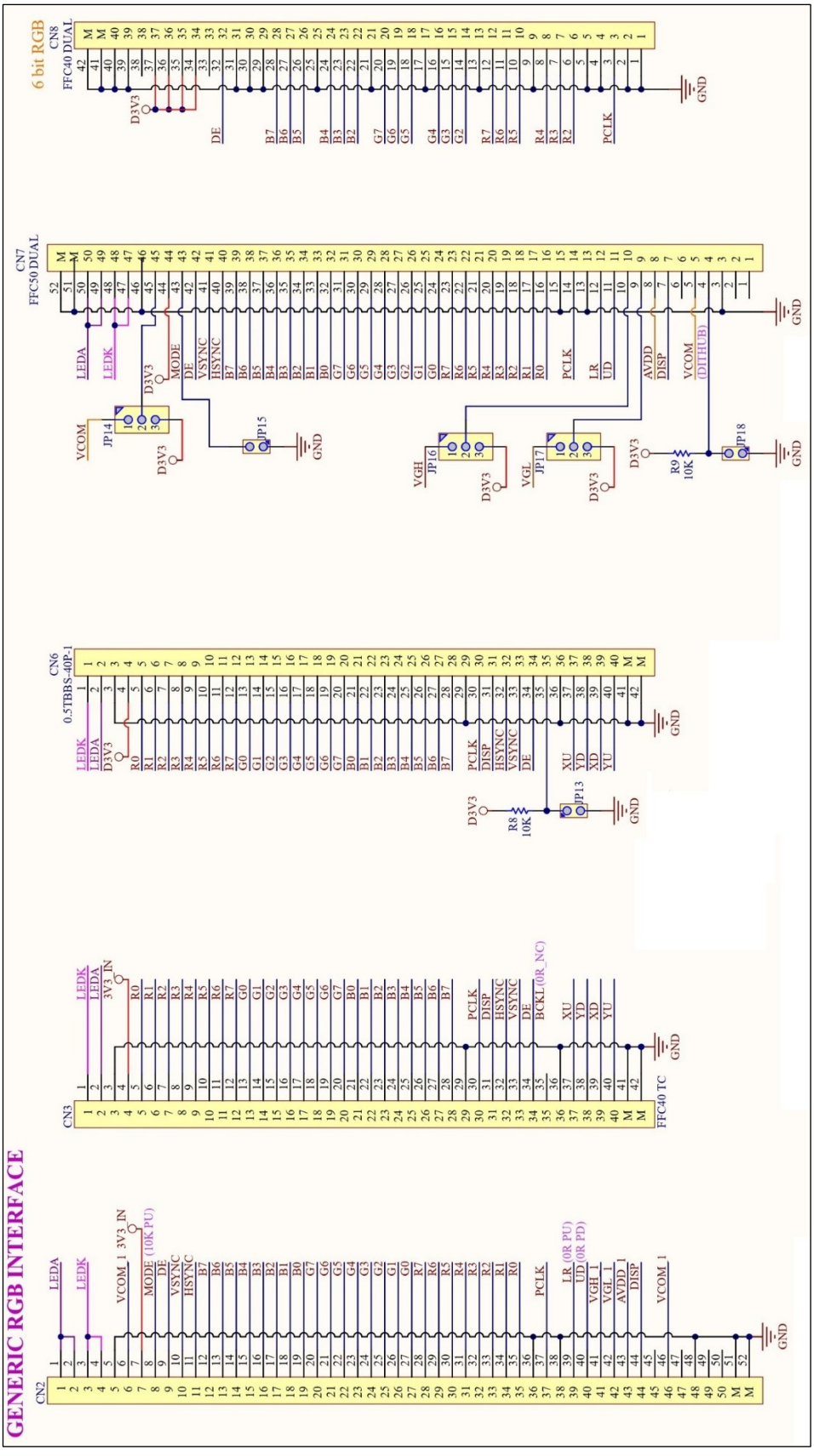


Figure 5 - RGB Interface

Copyright © Bridgetek Pte Ltd

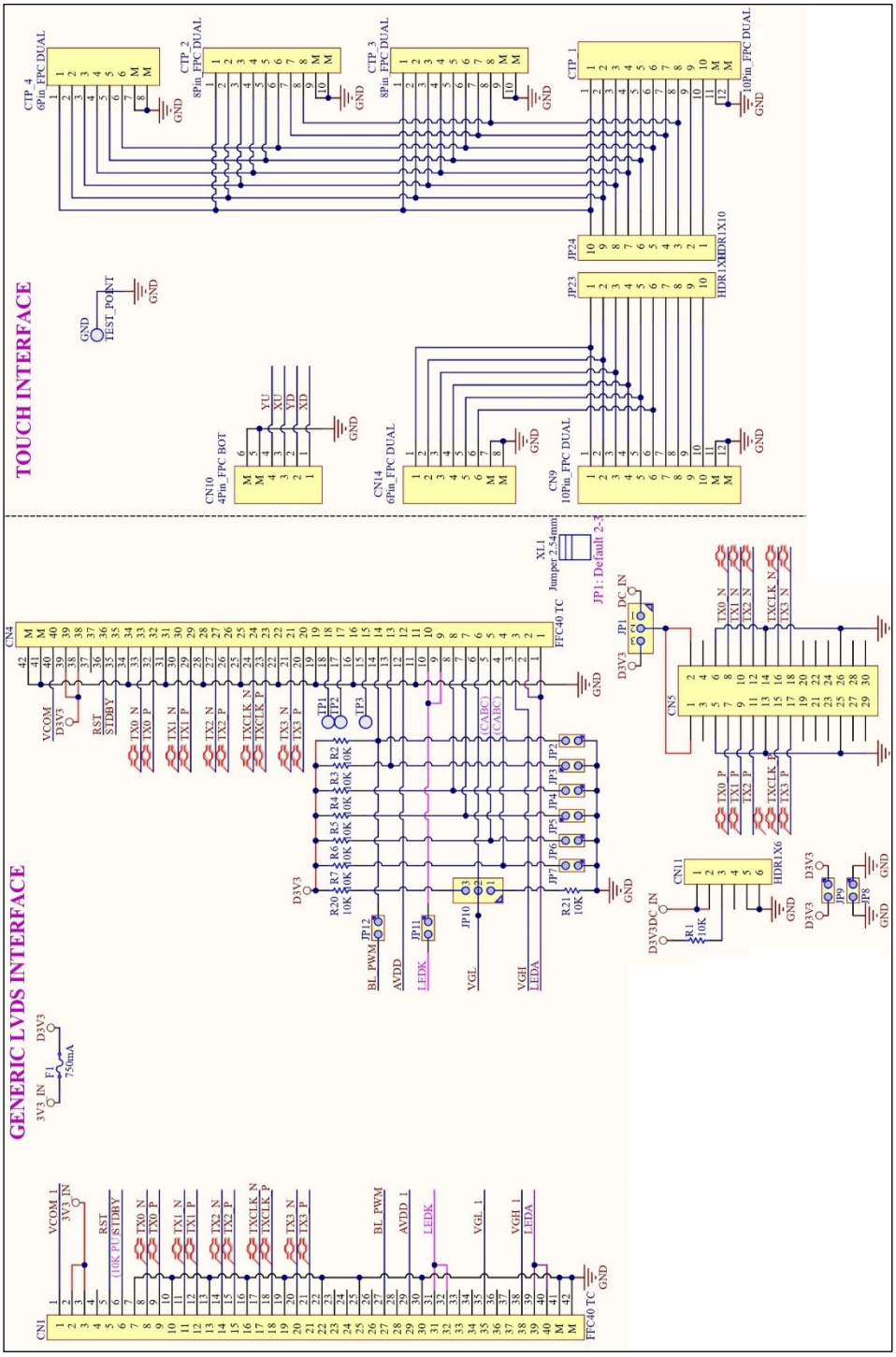


Figure 6 - LVDS and Touch Interface

Copyright © Bridgetek Pte Ltd

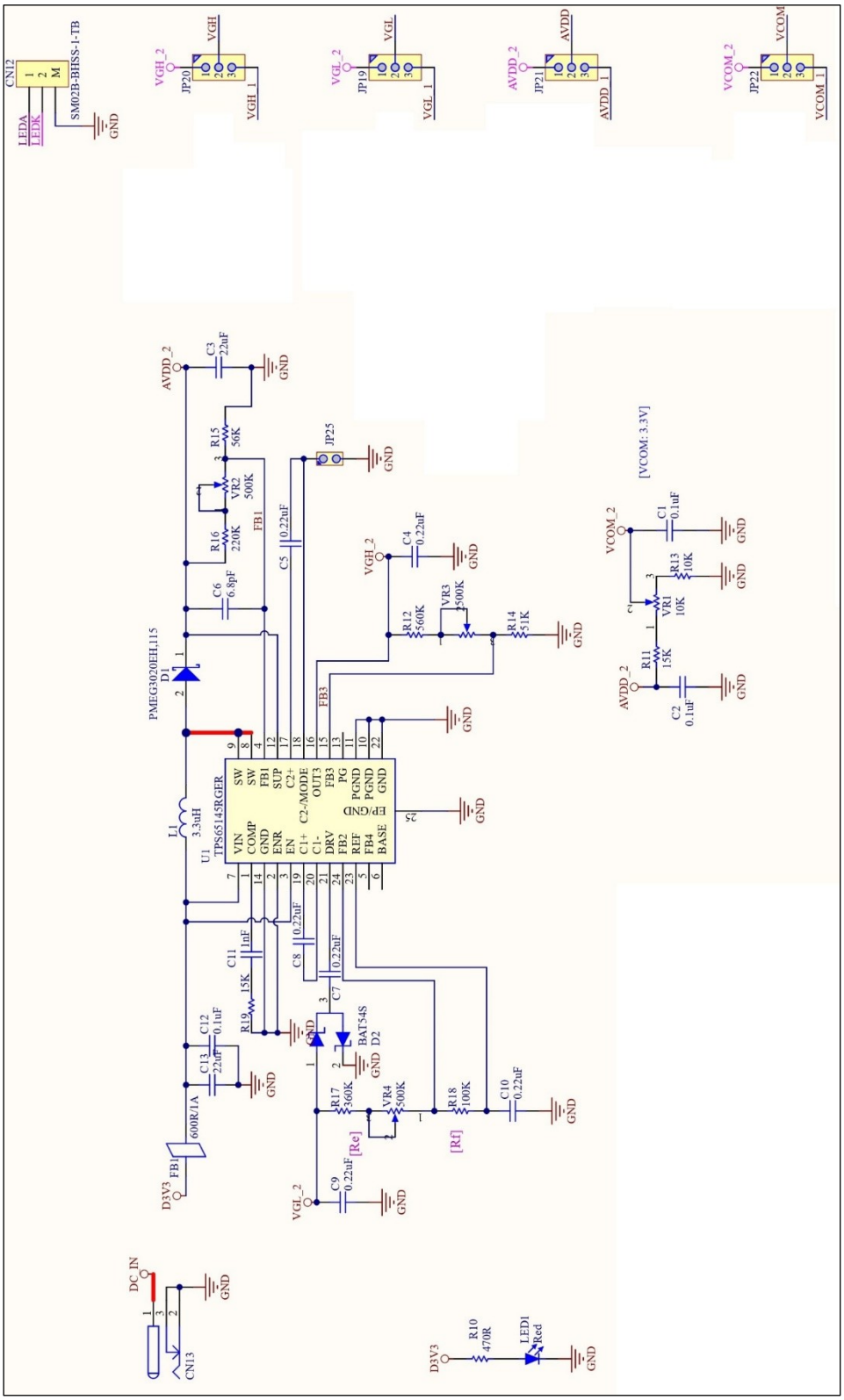


Figure 7 - Biasing Voltage Regulator

Copyright © Bridgetek Pte Ltd

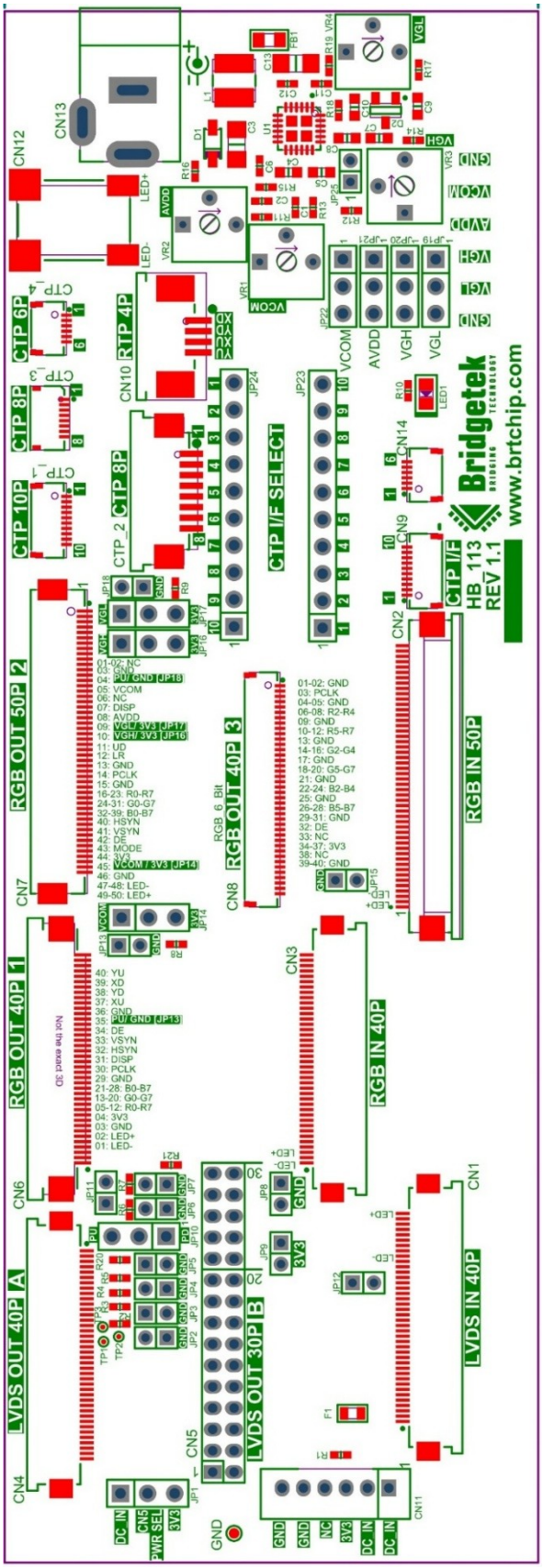


Figure 8 - Assembly Drawing

Copyright © Bridgetek Pte Ltd

5 Hardware Configuration

The VA-1001-01A is a generic LCD adaptor board designed to connect LVDS and RGB display panels with standard pin configurations to Bridgetek development modules featuring EVE graphics controllers.

Figure 9 shows the VA-1001-01A connected to an ME817EV development module driving a display panel. Figure 10 shows the adaptor board connected to a VM81X development module.

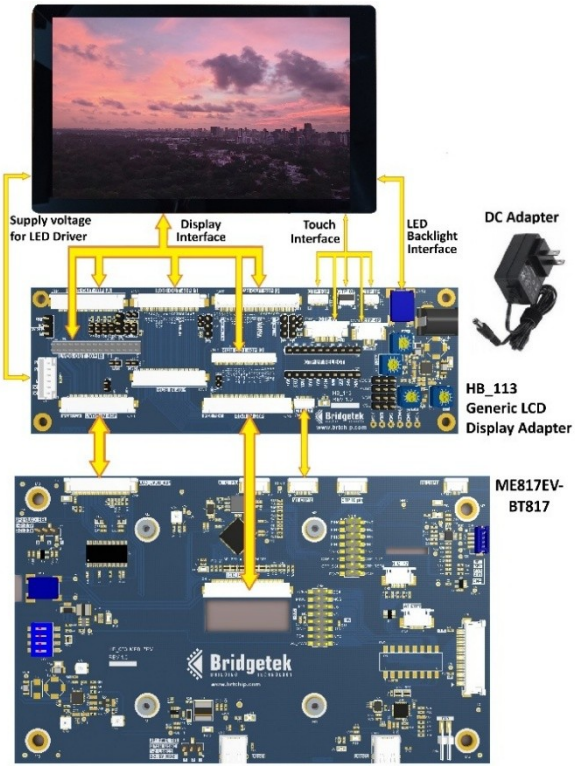


Figure 9 - VA-1001-01A with ME817EV Hardware Setup

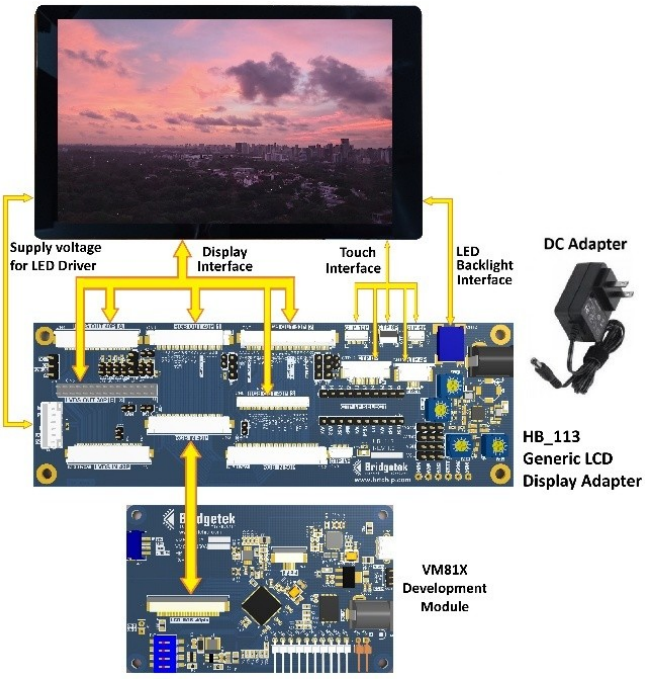


Figure 10 - VA-1001-01A with VM816C50A Hardware Setup

Copyright © Bridgetek Pte Ltd

5.1 Power Supply

5.1.1 System Power Supply

The VA-1001-01A adaptor board receives its 3.3 V system supply from the connected evaluation board through the 40-pin or 50-pin FPC input connector. This supply is also routed to the output connectors to power the connected display panel.

5.1.2 External Power Input Connector

A DC power jack (2.0 mm ID/5.5 mm OD) is provided on the adaptor board for an external power supply. The input power is routed to the output power connector and the LVDS output header (Connector B).

5.1.3 LCD Bias-Voltage Regulator

The board incorporates an LCD bias-voltage regulator that generates the AVDD, VGH, and VGL reference voltages required by the LCD panel. An additional reference voltage, VCOM, is derived from AVDD through a voltage-divider circuit.

Use a cross-head screwdriver to adjust the onboard trimmers and set the required bias voltages. Ground pads and dedicated test points are provided to facilitate voltage measurement and simplify the adjustment process.

Refer to section 6.2 Adjusting the LCD Bias Voltages , for detailed instructions on voltage measurement, test point locations, and bias-voltage adjustment procedures.

5.1.4 LED Backlight Power Supply

The adapter board receives the LED-backlight supply from the evaluation board through the 40-pin or 50-pin FPC input connector. This supply is routed to a two-pin, 3.5 mm output connector for driving the display panel's LED backlight. The achievable backlight brightness therefore depends on the power-delivery capability of the connected evaluation board.

When connected to the ME817EV evaluation board, the adaptor supports LED-backlight strings containing up to eight LEDs in series, with an adjustable constant-current drive of 120 mA to 280 mA.

5.1.5 External Power Output Connector

The board provides a 6-pin, 2 mm-pitch power connector for supplying external modules, such as LED drivers and HDMI-to-LVDS converter boards.

5.2 Display Input Interfaces

The VA-1001-01A Generic LCD Adaptor is compatible with Bridgetek's VM80X, VM81X, ME81X, and VM88X evaluation-board series, which feature FT80X, FT81X, BT81X, and BT88X EVE graphics controllers, respectively. The ME817EV evaluation board, in particular, is based on the BT817 EVE graphics controller.

5.2.1 LVDS Input Interface

The adapter board receives LVDS signals through CN1, a 40-pin, 0.5 mm-pitch, top-contact FPC connector designed to connect to the ME817EV's LVDS output connector (CN9). This connection supports a single-channel, four-data-lane LVDS interface, together with LCD bias voltages and LED-backlight power (LED+ and LED−).

Copyright © Bridgetek Pte Ltd

5.2.2 RGB Input Interface

The adaptor board provides two RGB input connectors. The first, CN2, is a 50-pin, 0.5 mm-pitch, top-contact FPC connector designed to connect to the ME817EV's RGB output connector (CN1). It supports 24-bit RGB signals, LCD bias voltages, and LED-backlight power (LED+ and LED−).

The second RGB input connector, CN3, is a 40-pin, 0.5 mm-pitch, top-contact FPC connector. It supports 24-bit RGB signals, LED-backlight power (LED+ and LED−), and analog signals from resistive touch panels. The connector follows a widely adopted industry-standard pinout and is designed to connect to the RGB output of VM8xx-series evaluation boards.

5.3 Display Output Interfaces

Based on market research and a detailed analysis of commercially available LCD panels, the following connectors and pin assignments were selected to provide broad compatibility with panels that use commonly adopted pin configurations.

5.3.1 LVDS Output Interface

The adaptor board routes LVDS output signals to two connectors.

- **Connector A**

The first connector, marked **A**, is CN4—a 40-pin, 0.5 mm-pitch, top-contact FPC connector. The top-contact configuration was selected because it is compatible with all LCD panels surveyed to date. Although a dual-contact connector could accommodate uncommon panels with reversed pin assignments, it would increase the risk of incorrect cable insertion and potential panel damage.

The output connector's pin assignment largely mirrors that of the input connector while incorporating signal-conditioning options. Selected signals can be pulled high, driven low, or left disconnected as required, providing compatibility with a wider range of LVDS panels beyond those supported by the default ME817EV output configuration.

Users can select the source of the LCD bias voltages—either the ME817EV or the adaptor board's onboard regulator, which provides a wider adjustable voltage range.

The connector supports:

- Single-channel, four-data-lane LVDS operation
- 3.3 V power supply
- Connect, disconnect, and adjustment options for LCD bias voltages
- Signal conditioning for control pins 27–28 and 33–37

- **Connector B**

The second connector, marked **B**, is a 30-pin (2 × 15), 2 mm-pitch header. It supports LVDS panels that use cables terminated with 20-pin or 30-pin connector housings, which are typically found on larger display panels.

Many of these panels use cable-to-board connectors on the panel side, such as Hirose DF14/DF19, JAE FI-X series, or equivalent types. The opposite ends of the cables are terminated with 20-pin or 30-pin connector housings for connection to the adaptor board.

The 30-pin header carries only LVDS signals and does not supply LED-backlight power. When using this header, connect either the 6-pin power-output connector to supply the LCD panel's LED driver or the 2-pin LED+ and LED− connector to power the backlight directly, depending on the panel's requirements.

Copyright © Bridgetek Pte Ltd

For applications requiring control signals to be tied high or low, two onboard 2-pin headers are provided:

CN9 for power and **CN8 for ground**.

The connector supports:

- Single-channel, four-data-lane LVDS operation
- Selectable 3.3 V or DC_IN power supply

5.3.2 RGB Output Interface

The adapter board routes RGB output signals to three connectors.

- **Connector 1**

The first RGB output connector, marked **1**, is CN6-a 40-pin, 0.5 mm-pitch, top-contact FPC connector. As with LVDS Connector A, the top-contact configuration was selected for compatibility with all surveyed RGB LCD panels. If the cable is inserted incorrectly, power and signals are not applied to the panel, helping protect it from damage caused by reverse orientation.

This connector maps the ME817EV's 50-pin RGB input pinout to a generic 40-pin output configuration commonly used by RGB LCD panels. It provides:

  - 24-bit RGB data and control signals
  - Connect, disconnect, and adjustment options for LCD bias voltages
  - 3.3 V power supply
  - LED-backlight power (LED+ and LED−)
  - Analog inputs from a resistive touch panel
  - Signal conditioning for pin 35

- **Connector 2**

The second RGB output connector, marked **2**, is CN7—a 50-pin, 0.5 mm-pitch FPC connector whose pin assignment mirrors the ME817EV input. Unlike the first output connector, CN7 features dual-sided contacts to support panels with different pin 1 orientations, including panels with reversed pin assignments. Verify the cable orientation carefully before insertion, as an incorrect connection may damage the LCD panel.

The connector supports:

  - 24-bit RGB data and control signals
  - Selectable LCD bias-voltage options: disconnected, fixed at 3.3 V, or supplied by the adjustable onboard regulator
  - 3.3 V power supply
  - LED-backlight power (LED+ and LED−)
  - Signal conditioning for pin 48

- **Connector 3**

The third RGB output connector, marked **3**, is CN8—a 40-pin, 0.5 mm-pitch, top-contact FPC connector compatible with all surveyed LCD panels that use 6-bit-per-channel RGB interfaces.

The connector supports:

- 18-bit RGB signals
- 3.3 V power supply

Copyright © Bridgetek Pte Ltd

5.4 Touch-Panel Interfaces

5.4.1 Capacitive Touch Interface

The board supports a I²C interface for capacitive touch panels (CTPs). Because no universal connector standard exists for CTPs, LCD panels may use different connector pitches, pin counts, contact orientations, and pin assignments.

To accommodate these variations, the adaptor board provides four dual-contact FPC connectors: three 0.5 mm-pitch connectors with 6, 8, and 10 pins, and one 8-pin connector with a 1.0 mm pitch. These options provide flexible connectivity for a wide range of capacitive touch-panel configurations. The CTP signals are routed through 10-pin, 2.54 mm-pitch headers, allowing the required connections between the LCD module and the EVE development board to be configured using jumper wires.

For connection to EVE development boards, the adaptor provides two dual-contact, 0.5 mm-pitch FPC connectors with 6 and 10 pins. The 10-pin connector supports boards such as the ME817EV. The 6-pin connector, introduced in PCB Revision 1.1, supports other Bridgetek EVE development boards that use a 6-pin CTP interface, including the FT813A series. Together, these connectors provide compatibility with the CTP interfaces used by most Bridgetek EVE development boards.

5.4.2 Resistive Touch Interface

The adaptor board also supports resistive touch panels. Because the ME817EV is based on the BT817 EVE controller and is designed for capacitive touch operation, it does not support resistive touch input. Resistive touch functionality is available when the adaptor is used with VM816X-series development boards. For resistive touch operation, the adaptor board receives the analog signals- XU, XL, YP, and YL- from the touch panel through connector CN6 or CN10 and routes them to CN3, which interfaces with the VM816X-series development board.

5.5 Jumper Configuration

The VA-1001-01A adaptor board includes configuration headers for selecting power sources and control-signal levels. These headers allow the output interfaces to be configured for a wide range of LCD panel requirements.

5.5.1 LVDS Output Connector A Pin Configuration

The following 2-pin and 3-pin headers configure the signal states of LVDS Output Connector A. Refer to Table 8 for header descriptions and Figure 11 for their locations.

Jumper	Description
JP2	Pin 14 state select. Open: high (Default); Short: low (pin grounded).
JP3	Pin 13 state select. Open: high (Default); Short: low (pin grounded).
JP4	Pin 8 state select. Open: high (Default); Short: low (pin grounded).
JP5	Pin 7 state select. Open: high (Default); Short: low (pin grounded).
JP6	Pin 5 state select. Open: high (Default); Short: low (pin grounded).
JP7	Pin 4 state select. Open: high (Default); Short: low (pin grounded).
JP10	Level selection for signal on pin 6. 1. VGL reference voltage: Open (Default State). 2. High: Short pin 1-2 (10K pull-up to 3V3) 3. Low: Short pin 2-3 (grounded) Note: Disconnect VGL input to pin (open JP19) before setting pin state.
JP11	Open/short PWM control on Pin 14
JP12	Open/short LEDK return path on Pin 9 and pin 10

Table 21 - LVDS Output Connector A Pin Configuration

Copyright © Bridgetek Pte Ltd

5.5.2 LVDS Output Connector B Power Selection

JP1 selects the power source supplied through the 30-pin LVDS Output Connector B (CN5) to connected devices, such as LCD panels or converter boards. The power source can be selected from either the DC input or the 3.3 V system supply. Refer to Table 22 for the jumper settings and Figure 11 for its location and pin orientation.

Pin / Jumper	Connector B Power Source	
	1-2	2-3
JP1	DC-Jack	3V3

Table 22 - LVDS Output Connector B Power-Source Selection

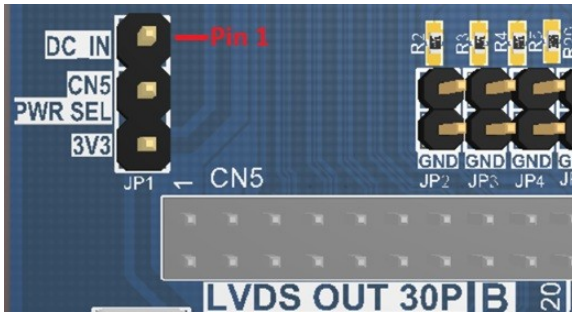


Figure 11 - JP1 Location

5.5.3 RGB Output Connector 1 Pin Configuration

JP13 configures the signal state of pin 35 on RGB Output Connector 1.

Jumper	Description
JP13	Pin 35 state select. Open: high (Default); Short: low (pin grounded).

Table 23 - RGB Output Connector 1 Pin-Configuration Selection

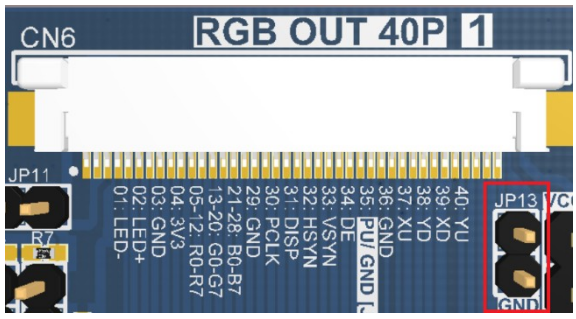


Figure 12 - JP13 Location

5.5.4 RGB Output Connector 2 Pin Configuration

The following 2-pin and 3-pin headers configure the signal states of RGB Output Connector 2. Refer to Table 10 for the header descriptions and Figure 13 for their locations.

Jumper	Description
JP14	Pin 45 voltage level select. Short 1-2: VCOM (Default); 2-3: 3V3.
JP15	Pin 43 state select. Open: high (Default); Short: low (pin grounded).
JP16	Pin 10 voltage level select. Short 1-2: VGH (Default); 2-3: 3V3.
JP17	Pin 9 voltage level select. Short 1-2: VGL (Default); 2-3: 3V3.
JP18	Pin 4 state select. Open: high (Default); Short: low (pin grounded).

Table 24 - RGB Output Connector 2 Pin-Configuration Selection

Copyright © Bridgetek Pte Ltd

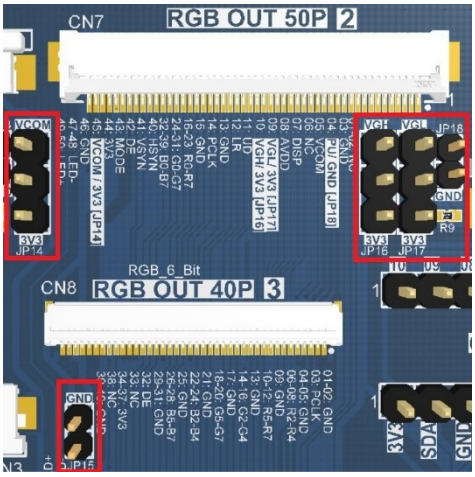


Figure 13 - Header Location

5.5.5 LCD Bias-Voltage Source Selection

These 3-pin headers select the source of the LCD bias voltages—either the ME817EV or the VA-1001-01A adaptor board. The adaptor's bias circuit is based on the ME817EV design but provides a wider adjustable output-voltage range, enabling support for a broader variety of LCD panels. Table 25 lists the jumper settings, while Figure 14 shows the header locations and pin orientations.

Pin / Jumper	Input Source	
	1-2	2-3
JP19	VA-1001-01A	ME817EV
JP20	VA-1001-01A	ME817EV
JP21	VA-1001-01A	ME817EV
JP22	VA-1001-01A	ME817EV

Table 25 - LCD Bias-Voltage Source Selection

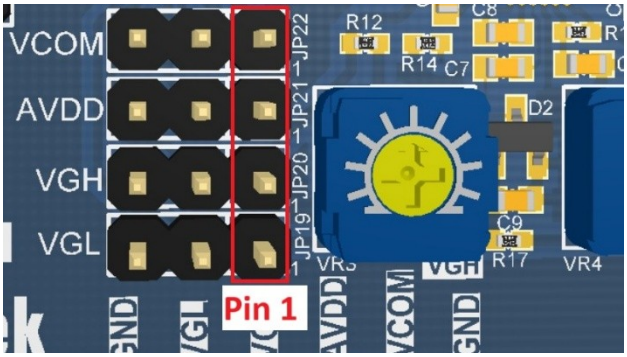


Figure 14 - Header Location

5.5.6 Capacitive Touch-Signal Connections

These 10-pin headers configure the capacitive touch interface by connecting the panel's touch signals to power, ground, and the ME817EV's BT817 I²C control interface. The pin assignments of capacitive touch connectors CTP_1 through CTP_4 map directly to the input CTP signal header (JP24)—pin 1 to pin 1, pin 2 to pin 2, and so forth. Use the supplied jumper wires to connect the panel's capacitive touch signals to the required BT817 I²C signals, as detailed in Table 26 and illustrated in Figure 15.

JP24	10	09	08	07	06	05	04	03	02	01
JP23	3V3	SDA	GND	SCL	3V3	GND	INT	3V3	RST	GND

Table 26 - Capacitive Touch-Signal Connection

Copyright © Bridgetek Pte Ltd

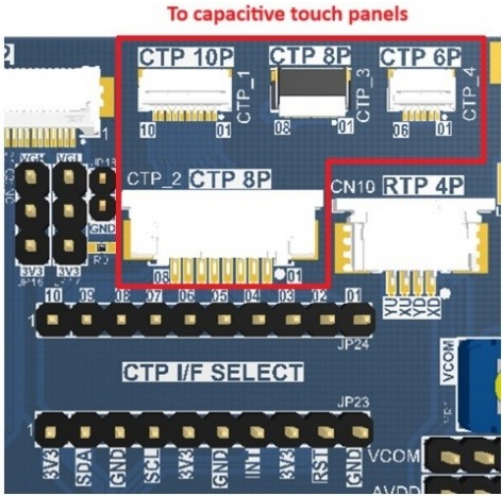


Figure 15 - Capacitive Touch Interface Configuration

5.6 PCB Functional Overview

Figure 16 illustrates the functions of the board's various sections.

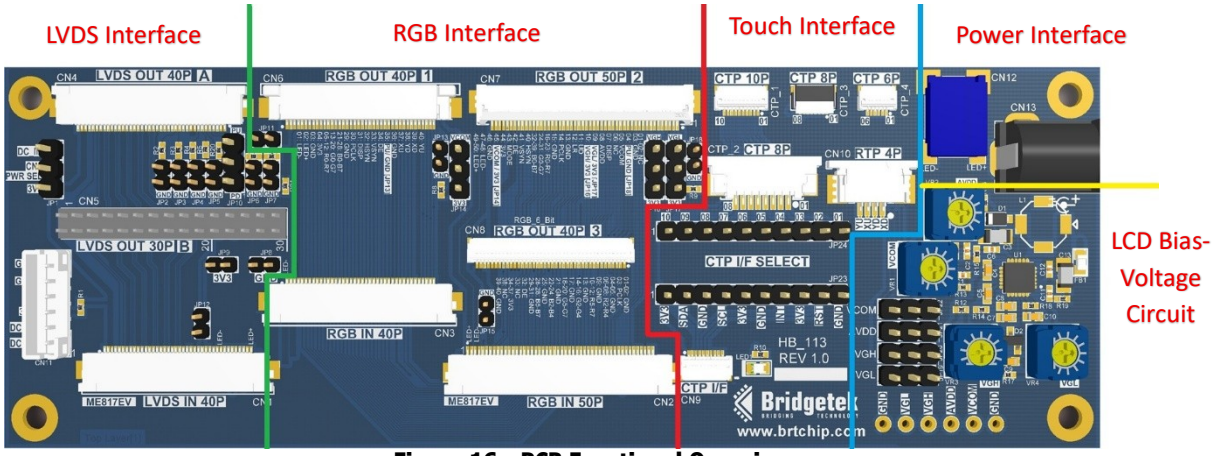


Figure 16 - PCB Functional Overview

Region	Board Location	Function
LVDS Interface	Left of the green divider	LVDS input, output connectors A and B, and LVDS signal-configuration headers
RGB Interface	Between the green and red dividers	24-bit and 18-bit RGB input/output connectors and signal-configuration headers
Touch Interface	Between the red and blue dividers	Capacitive and resistive touch connectors, routing headers, and CTP interface selection
Power Interface	Upper-right section, above the yellow divider	External DC power input and LED-backlight power output
LCD Bias-Voltage Circuit	Lower-right section, below the yellow divider	Generation and adjustment of AVDD, VCOM, VGH, and VGL, with measurement test points

Table 27 - VA-1001-01A Functional Sections

Copyright © Bridgetek Pte Ltd

6 Generic LCD Adaptor Board Configuration and Operation

This section describes how to:

- Verify pin compatibility between the target LCD panel and the adaptor board.
- Adjust the LCD bias voltages to meet the target panel's requirements.
- Connect the LCD panel to an EVE evaluation board through the adaptor board.

6.1 Verifying LCD Panel Compatibility

Before using the generic LCD adaptor board, verify that the pin assignment and physical type of an output connector are compatible with the target RGB or LVDS panel. The adaptor board supports two LVDS and three RGB output-interface configurations. Refer to the connector pin-assignment tables and the available alternative pin-configuration options when selecting a suitable output connector.

6.1.1 LVDS Panel Compatibility Check

- **Connector A – 40-Pin 0.5mm pitch Top Contact FPC Connector**

	Pin Configuration			
Pin	Default State	Alternate Options		
		1	2	3
1	VCOM	Disconnect pin		
2	VCC_3V3			
3	VCC_3V3			
4	NC			
5	State Configurable by EVE "DISP"			
6	STBYB			
7	GND			
8	Rxin0-			
9	Rxin0+			
10	GND			
11	Rxin1-			
12	Rxin1+			
13	GND			
14	Rxin2-			
15	Rxin2+			
16	GND			
17	RxCLK-			
18	RxCLK+			
19	GND			
20	Rxin3-			
21	Rxin3+			
22	GND			
23	NC			
24	NC			
25	GND			
26	NC			
27	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)	Disconnect pin	
28	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)		
29	AVDD			
30	GND			
31	VLED-	Disconnect pin		
32	VLED-	Disconnect pin		
33	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)		
34	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)		
35	VGL	Logic low (10 kΩ PD to ground)	Logic High (10 kΩ PU to 3.3 V)	Disconnect pin
36	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)		
37	Logic High (10 kΩ PU to 3.3 V)	Logic low (Pin to ground)		
38	VGH	Disconnect pin		
39	VLED+			
40	VLED+			

Figure 17 - LVDS Output Connector A Pin Assignments and Configuration Options

Copyright © Bridgetek Pte Ltd

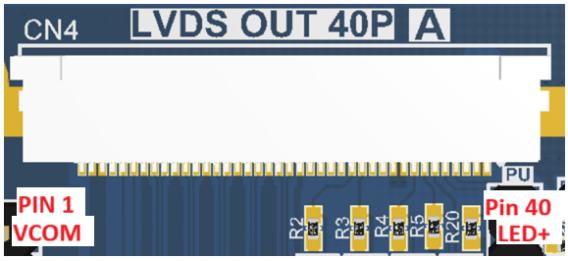


Figure 18 - LVDS Output Connector A Pin Orientation

- **Connector B – 20-Pin/ 30-Pin 2mm pitch Header**

	Pin Configuration					
Pin	Default State		Pin	Alternate Options		
				1	2	3
1	VDD_CONFIGURABLE	VDD_CONFIGURABLE	2	3V3 via System Power	DC_IN via DC-Jack	Disconnect pin
3	NC	NC	4			
5	GND	GND	6			
7	Rxin0+	Rxin0-	8			
9	Rxin1+	Rxin1-	10			
11	Rxin2+	Rxin2-	12			
13	GND	GND	14			
15	RxCLK+	RxCLK-	16			
17	Rxin3+	Rxin3-	18			
19	NC	NC	20			
21	NC	NC	22			
23	NC	NC	24			
25	GND		26			
27	NC	NC	28			
29	NC	NC	30			

Figure 19 - LVDS Output Connector B Pin Assignments and Configuration Options

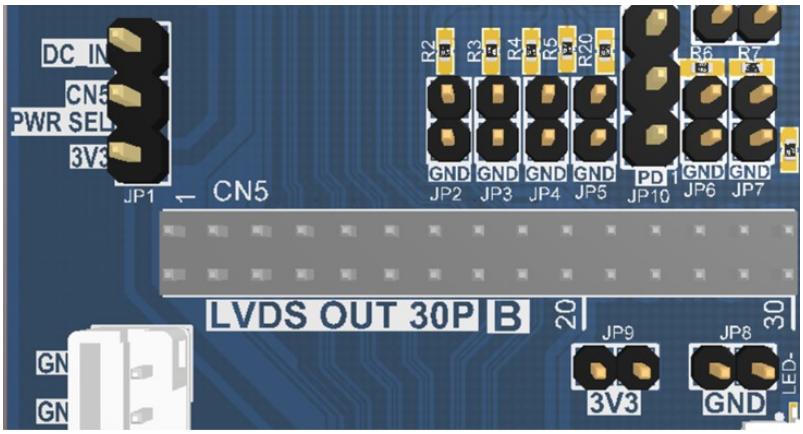


Figure 20 - LVDS Output Connector B Pin Orientation

Copyright © Bridgetek Pte Ltd

6.1.2 RGB Panel Compatibility Check

- **Connector 1 – 40-Pin 0.5mm pitch Top Contact FPC Connector**

	Pin Configuration	
Pin	Default State	Alternate Option
1	VLED-	
2	VLED+	
3	GND	
4	VDD	
5	R0	
6	R1	
7	R2	
8	R3	
9	R4	
10	R5	
11	R6	
12	R7	
13	G0	
14	G1	
15	G2	
16	G3	
17	G4	
18	G5	
19	G6	
20	G7	
21	B0	
22	B1	
23	B2	
24	B3	
25	B4	
26	B5	
27	B6	
28	B7	
29	GND	
30	CLKIN	
31	DISP	
32	HS	
33	VS	
34	DEN	
35	gic High (10 kΩ PU to 3.3	Logic low (10 kΩ PD to ground)
36	GND	
37	NC_XR	
38	NC_YD	
39	NC_XL	
40	NC_YU	

Figure 21 - RGB Output Connector 1 Pin Assignments and Configuration Options

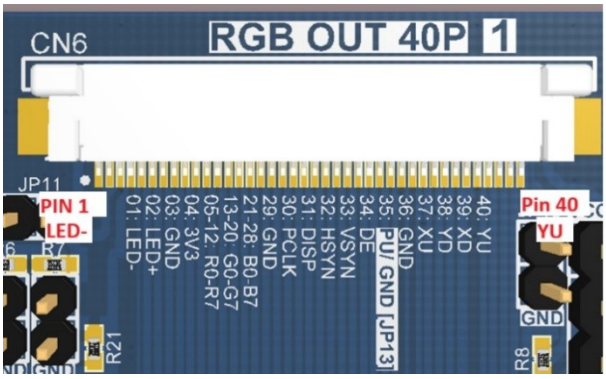


Figure 22 - RGB Output Connector 1 Pin Orientation

Copyright © Bridgetek Pte Ltd

- **Connector 2 – 50-Pin 0.5mm pitch Top and Bottom Contact FPC Connector**

	Pin Configuration		
Pin	Default State	Alternate Options	
		1	2
50	VLED+		
49	VLED+		
48	VLED-		
47	VLED-		
46	GND		
45	VCOM	Disconnect pin	3V3 via System Power
44	DVDD_3V3		
43	Logic High (10 kΩ PU to 3.3 V)	Logic low (10 kΩ PD to ground)	
42	DE		
41	VS		
40	HS		
39	B7		
38	B6		
37	B5		
36	B4		
35	B3		
34	B2		
33	B1		
32	B0		
31	G7		
30	G6		
29	G5		
28	G4		
27	G3		
26	G2		
25	G1		
24	G0		
23	R7		
22	R6		
21	R5		
20	R4		
19	R3		
18	R2		
17	R1		
16	R0		
15	GND		
14	DCLK		
13	GND		
12	Logic High (0Ω PU to 3.3 V)		
11	Logic low (0Ω PD to ground)		
10	VGH	Disconnect pin	3V3 via System Power
9	VGL	Disconnect pin	3V3 via System Power
8	AVDD	Disconnect pin	
7	State Configurable by EVE "DISP"		
6	NC		
5	VCOM	Disconnect pin	
4	Logic High (10 kΩ PU to 3.3 V)	Logic low (10 kΩ PD to ground)	
3	GND		
2	NC		
1	NC		

Figure 23 - RGB Output Connector 2 Pin Assignments and Configuration Options

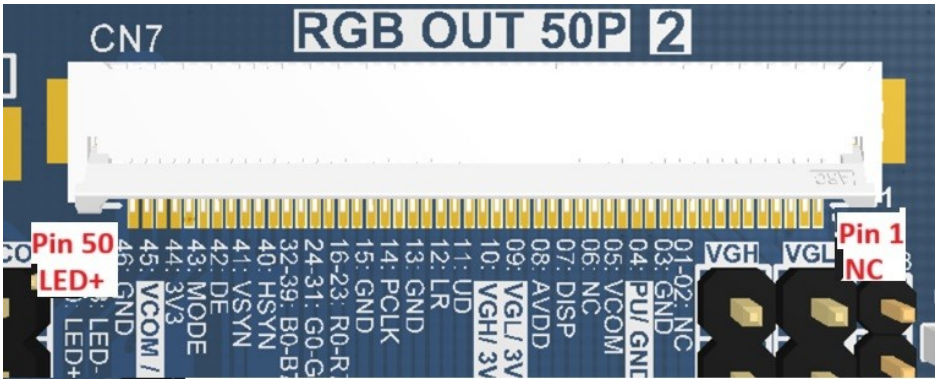


Figure 24 - RGB Output Connector 2 Pin Orientation

Copyright © Bridgetek Pte Ltd

- **Connector 3 – 40-Pin 0.5mm pitch Top and Bottom Contact FPC Connector**

Pin	Configuration
40	GND
39	GND
38	NC
37	VDD
36	VDD
35	VDD
34	VDD
33	NC
32	DEN
31	GND
30	GND
29	GND
28	B5
27	B4
26	B3
25	GND
24	B2
23	B1
22	B0
21	GND
20	G5
19	G4
18	G3
17	GND
16	G2
15	G1
14	G0
13	GND
12	R5
11	R4
10	R3
9	GND
8	R2
7	R1
6	R0
5	GND
4	GND
3	DCLK
2	GND
1	GND

Figure 25 - RGB Output Connector 3 Pin Assignments

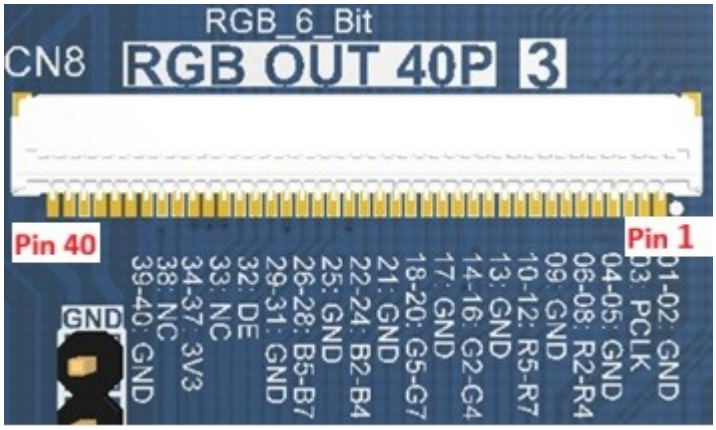


Figure 26 - RGB Output Connector 3 Pin Orientation

Caution: Connectors CN2 and CN3 use dual-contact FPC connectors to accommodate cables with reversed pin configurations. However, this design also permits incorrect cable insertion. Carefully verify the cable orientation and pin alignment before applying power to prevent damage to the connected LCD panel.

Because of limited PCB space, the silkscreen does not show the complete pin assignments for every connector. Refer to Figure 27 for the full pin assignments of the RGB and LVDS input/output connectors.

Use the image to verify the orientation and connections of the LCD module and EVE development module before applying power. Incorrect insertion or cable orientation may damage the connected hardware.

Copyright © Bridgetek Pte Ltd

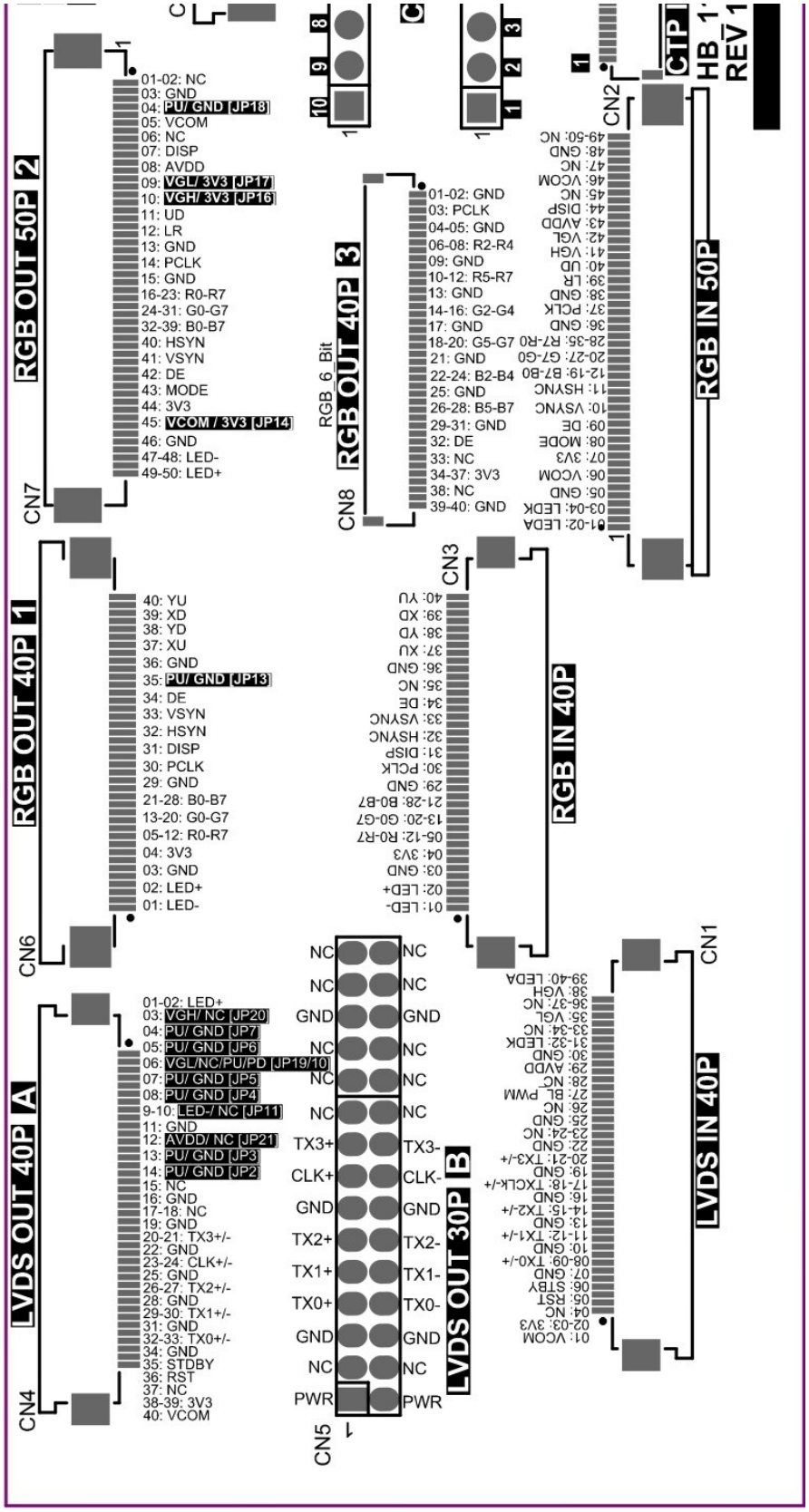


Figure 27 - Complete Pin Assignments for RGB and LVDS Input/Output Connectors

Note: Configuration headers and other connectors not relevant to the pin assignments have been omitted from the preceding image to improve clarity and label readability.

Copyright © Bridgetek Pte Ltd

6.2 Adjusting the LCD Bias Voltages

This step may be skipped if the target LCD panel does not require external bias voltages. To prevent damage from excessive positive or negative voltages, adjust and verify all required bias voltages before connecting the LCD panel under test.

The LCD bias voltages can be supplied by either the adaptor board or the connected EVE development board, such as the ME817EV. Both the VA-1001-01A and ME817EV use the Texas Instruments TPS65145 bias-voltage regulator, although their circuit implementations differ.

PCB Revision 1.0 of the adaptor board operates only in Tripler mode and provides a wider adjustable bias-voltage range than the ME817EV. PCB Revision 1.1 adds a jumper for selecting between doubler and Tripler operating modes.

The ME817EV is configured for Tripler mode by default. However, optional component footprints allow its TPS65145 regulator circuit to be reconfigured for doubler-mode operation when required.

The TPS65145 regulator generates the AVDD, VGH, VGL, and VCOM bias voltages on both boards. The following list shows the adjustable voltage ranges provided by the adaptor board in Tripler mode. The values and adjustment ranges of VGH, VGL, and VCOM depend on AVDD because they are derived from it.

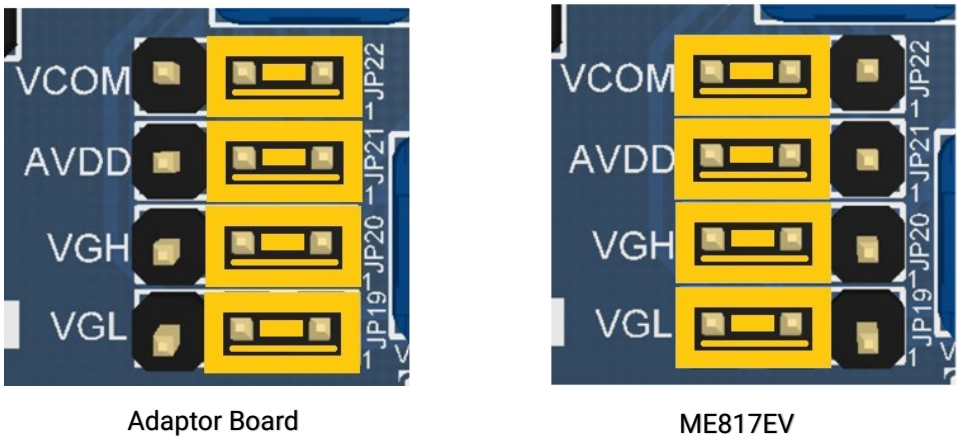
- AVDD: ~5.65V to 15.6V
- VGH: ~ 14.95V to 31.6V
- VGL: ~ 4.3V to -10.4V
- VCOM: 1.6V to 8.85V

The circuit uses adjustable resistors to control the feedback voltages of the boost-converter and charge-pump circuits, allowing each output voltage to be set as required. Follow the procedure below to adjust the bias voltages to the levels specified for the target LCD panel.

6.2.1 Selecting the LCD Bias-Voltage Source

For typical applications, use the adaptor board as the LCD bias-voltage source because it provides a wider adjustment range and improved trimmers for easier voltage setting. However, when the difference between VGH and AVDD is relatively small—for example, AVDD = 10 V and VGH = 15 V—the regulator must operate in doubler mode, as available on the ME817EV.

Headers JP19 through JP22 select the LCD bias-voltage source. Configure the headers as shown in Figure 28.



Adaptor Board ME817EV

Figure 28 - LCD Bias-Voltage Source Selection

Copyright © Bridgetek Pte Ltd

6.2.2 Adjusting the Bias-Voltage Levels

Next, adjust the bias voltages to the levels specified for the target LCD panel. Set AVDD first because the remaining bias voltages are derived from it and will change when AVDD is adjusted.

Connect the adaptor board to the EVE development module, such as the ME817EV, and apply power without connecting the LCD panel. Using a digital multimeter, measure AVDD at the test pads shown in Figure 29.

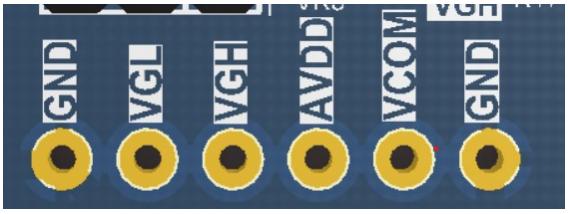


Figure 29 - LCD Bias-Voltage Test Pads

Using a suitable Phillips-head screwdriver, slowly adjust the AVDD voltage with trimmer VR2, as shown in Figure 30. Avoid rapid or excessive adjustments, as an out-of-regulation condition may cause the regulator to enter shutdown mode. In this state, the output may fall to millivolt levels. To recover, power-cycle the development module and adaptor board to reset the regulator.

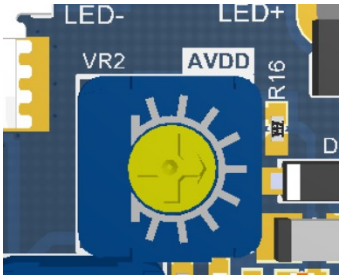


Figure 30 - Trimmer VR2 for AVDD Adjustment

After setting AVDD to the required level, adjust the remaining bias voltages in the following order: VGL using VR4, VGH using VR3, and finally VCOM using VR1. The locations of the adjustment trimmers are shown in Figure 31.



Figure 31 - Trimmers VR1, VR3 and VR4 for VCOM, VGH and VGL Adjustment

6.2.3 Configuring the ME817EV TPS65145 for Doubler Mode

The TPS65145 must operate in doubler mode when the VGH-to-AVDD voltage difference is less than twice the AVDD voltage. Doubler mode can be configured using either the Generic LCD Adaptor PCB Revision 1.1 or the ME817EV development board.

Using Generic LCD Adaptor PCB Revision 1.1

PCB Revision 1.1 provides jumper JP25 for selecting the TPS65145 operating mode:

Copyright © Bridgetek Pte Ltd

- **JP25 open:** Tripler mode
- **JP25 shorted:** Doubler mode

To enable doubler mode, install a jumper on JP25 and adjust the adaptor board's bias voltages to meet the LCD panel's requirements.

Using the ME817EV Development Board

The TPS65145 on the ME817EV development board operates in Tripler mode by default. To configure it for doubler mode:

- Remove flying capacitor C47.
- Connect the C2−/MODE pin to ground by installing a 0 Ω resistor at R65.
- Adjust the bias voltages on the ME817EV board to meet the LCD panel's requirements.

Figure 32 shows the ME817EV bias-regulator circuit and the locations of C47 and R65.

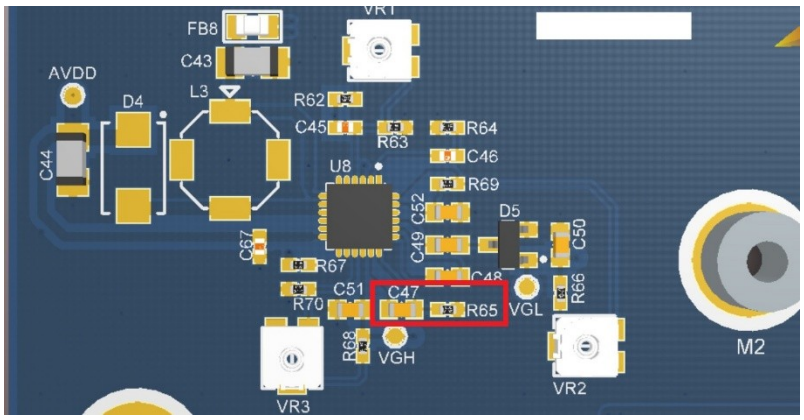


Figure 32 – Location of C47 and R65 on the ME817EV Development Board

Note: Generic LCD Adaptor PCB Revision 1.0 supports only Tripler mode.

6.3 Configuring Pin States

After configuring the bias voltages to meet the LCD panel's requirements, set the panel's control pins to the appropriate operating states. Refer to Section 6.1 Verifying LCD Panel Compatibility for information about the configurable pins and their available states. Configure each pin according to the panel's requirements. For jumper configuration instructions, refer to Section 5.5 Jumper Configuration.

6.4 Connecting LCD Panels to EVE Evaluation Board via the Adapter Board

After confirming that the target LCD panel is compatible with the adaptor board, connect the panel to the EVE evaluation board through the adaptor board, which provides the required signal translation. The supplied FPC cables connect the LCD panel, adaptor board, and EVE evaluation board.

The following illustrations show how to connect LCD panels to the ME817EV evaluation board using the adaptor board.

6.4.1 Connecting LVDS LCD Panel to the ME817EV Evaluation Board

To connect an LVDS LCD panel to the ME817EV evaluation board, connect the panel to the adaptor board first, and then connect the adaptor board to the evaluation board. Use the supplied 40-pin, approximately 5 cm long FPC cable with top contacts at both ends to connect the adaptor board to the ME817EV.

Copyright © Bridgetek Pte Ltd

Illustrations 1 and 2 show LVDS panel connections using Connector A and Connector B, respectively.

Illustration 1-Connector A: Use the supplied 15 cm, 40-pin FPC cable with contacts on the same side to connect the LCD panel to the adaptor board. A cable with contacts on opposite sides is also supplied to accommodate panels with different connector orientations. Select the cable that matches the panel's connector configuration.

The backlight can be connected through either the 40-pin FPC connector or the 3.5 mm-pitch BHS connector, as shown in Figure 33.

Illustration 2-Connector B: Use an LVDS cable (not supplied) with a 30-pin housing to connect the LCD panel to the adaptor board. Because the LVDS cable does not carry the LED+ and LED− supply, connect the panel's backlight through the separate DC or LED power connectors.

Connector B also supports LCD panels with a 20-pin housing, which typically uses the same pin assignments. Refer to Figure 34 for the connection details.

Illustration 1: Single-Channel LVDS Panel Connected via Connector A

This example shows a single-channel LVDS panel receiving its bias voltages through the 40-pin connector. The LED backlight can be powered through either the 40-pin connector or the 3.5 mm-pitch BHS connector.



Figure 33 - LVDS LCD Panel Connection via Connector A

Copyright © Bridgetek Pte Ltd

Illustration 2: Single-Channel LVDS Panel Connected via Connector B

This example shows a single-channel LVDS panel that does not require external bias voltages. The LVDS signals are provided through the 30-pin connector. The panel includes an integrated LED driver that requires only a power supply, such as 12 V, connected through the 6-pin power connector (CN11).

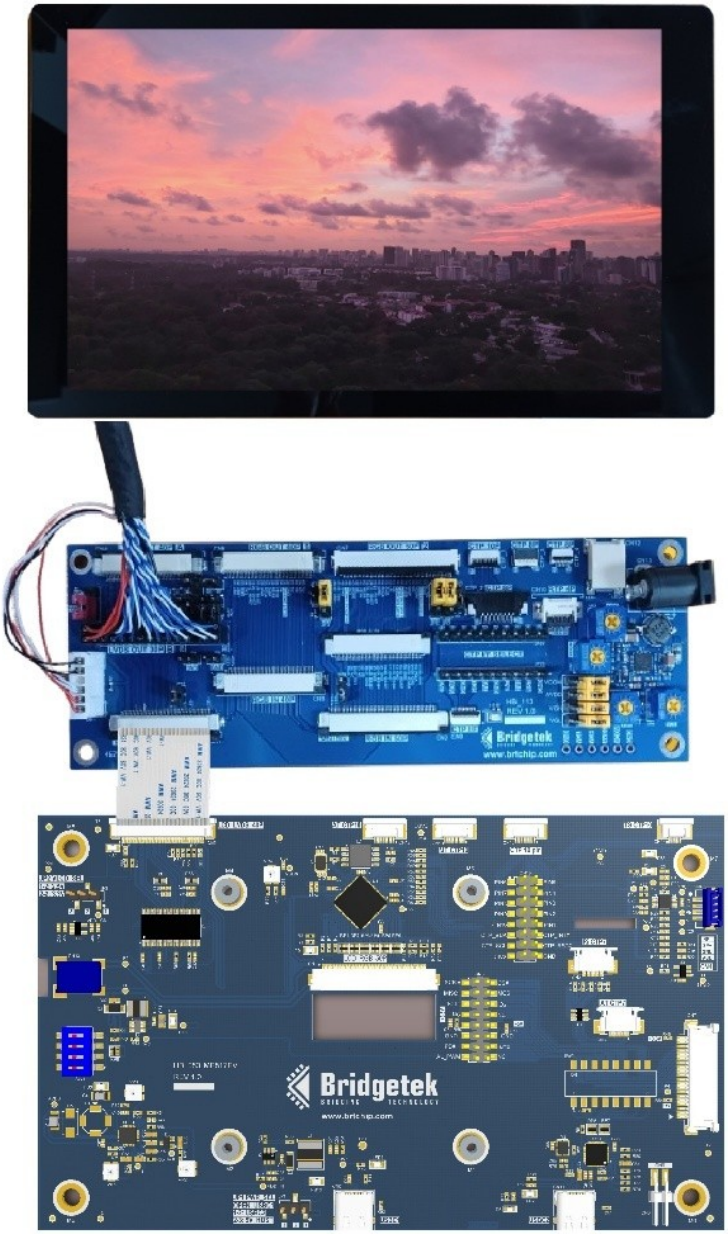


Figure 34 - LVDS LCD Panel Connection via Connector B

6.4.2 Connecting an RGB LCD Panel to the ME817EV Evaluation Board

To connect an RGB LCD panel to the ME817EV evaluation board, use the supplied 50-pin FPC cable, approximately 10 cm long, with contacts on the same side at both ends. This cable connects the adaptor board to the ME817EV evaluation board. Illustrations 3 and 4 show RGB panel connections using Connector 1 and Connector 2, respectively.

Illustration 3-Connector 1: Most LCD panels smaller than 7 inches have an attached flexible PCB with exposed gold contact fingers. These panels can be inserted directly into a compatible connector, as shown in this example. For panels with an onboard FPC connector, two 15 cm, 40-pin FPC cables are supplied: one

Copyright © Bridgetek Pte Ltd

with contacts on the same side and another with contacts on opposite sides. Select the cable that matches the panel's connector orientation. Refer to Figure 35 for the connection details.

Illustration 4—Connector 2: In this example, the LCD panel has a flexible PCB with exposed contact pads. Insert the flexible PCB directly into Connector 2 with the contact pads facing upward, as required by the panel's pin configuration. The dual-contact connector also accommodates panels with the opposite Pin 1 orientation without requiring modification. For panels with an FPC connector mounted on the flexible PCB, use one of the supplied 50-pin FPC cables. Two cable types are provided: one with contacts on the same side and another with contacts on opposite sides. Select the cable that matches the panel's connector orientation.

Note: The 50-pin connector supports both top and bottom contacts. Together with the supplied cables—available with contacts on the same or opposite sides—this allows panels with various pin orientations to be connected. Verify the panel's pin orientation and cable alignment before insertion to prevent damage. Refer to Figure 36 for the connection details.

Illustration 3: 24-Bit RGB Panel Connected via Connector 1

This example shows a 24-bit RGB LCD panel receiving its control signals and LED-backlight power through the 40-pin connector. The connector also provides pins for a resistive touch interface.

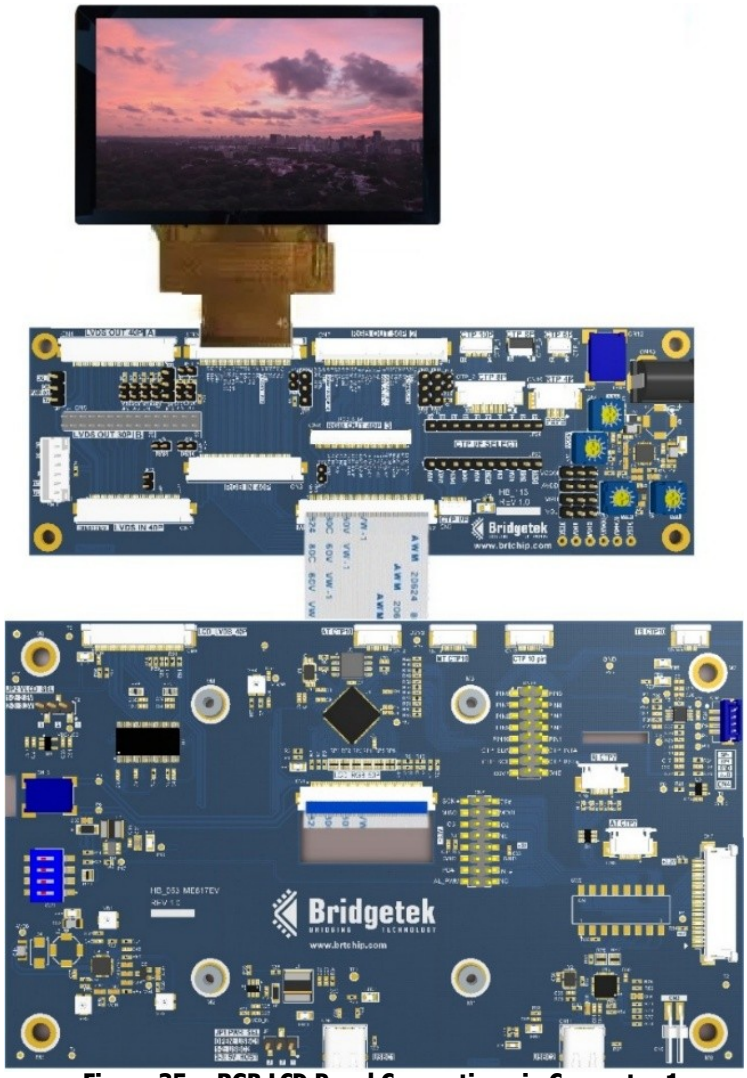


Figure 35 - RGB LCD Panel Connection via Connector 1

Copyright © Bridgetek Pte Ltd

Illustration 4: 24-Bit RGB Panel Connected via Connector 2

This example shows a 24-bit RGB LCD panel receiving its bias voltages and LED-backlight power through the 50-pin connector.

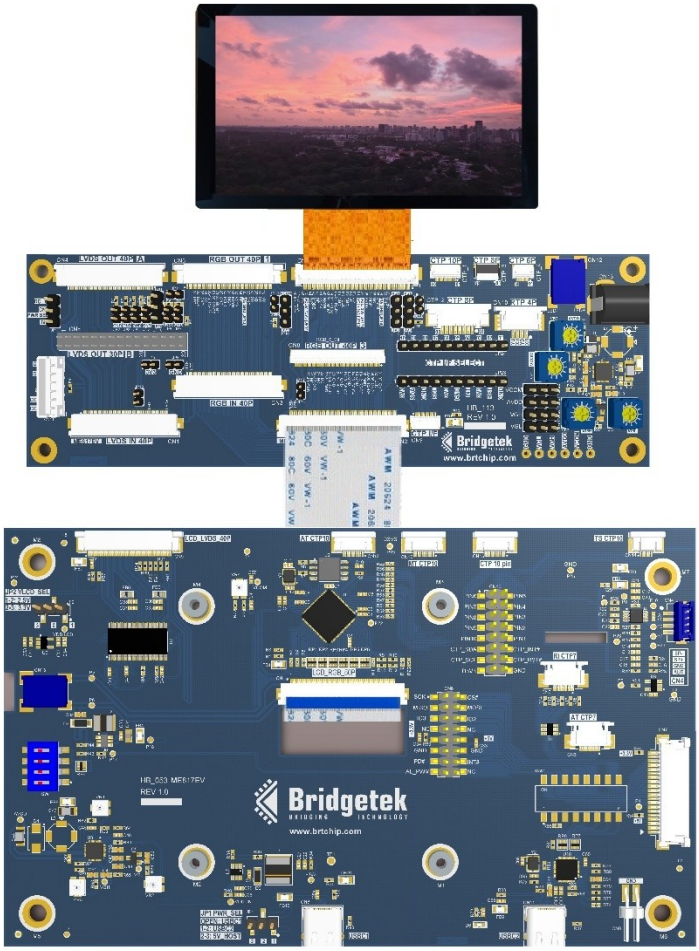


Figure 36 - RGB LCD Panel Connection via Connector 2

6.5 Connecting Capacitive Touch Panel to EVE Evaluation Board via the Adapter Board

The Generic LCD Adaptor provides a flexible capacitive touch panel (CTP) interface that supports a wide range of touch panels. Multiple connector options and configurable signal routing accommodate the various CTP connector types and pin assignments commonly used by LCD modules.

6.5.1 EVE Evaluation Board Interface

Revision 1.1 updates the CTP interface between the adaptor board and EVE development boards to support a wider range of boards. This section describes the available interface configurations and the differences between Revisions 1.0 and 1.1.

Revision 1.0

The adaptor board provides a 10-pin, 0.5 mm-pitch, dual-contact FPC connector for connecting to EVE development boards with a 10-pin CTP interface, such as the ME817EV.

The connector's pin assignments are predefined to match the ME817EV CTP interface because Revision 1.0 was designed primarily for use with this development board.

Copyright © Bridgetek Pte Ltd

Revision 1.1

The adaptor board provides two FPC connector options for connecting to the CTP interface of an EVE development board:

- 6-pin, 0.5 mm-pitch, dual-contact FPC connector
- 10-pin, 0.5 mm-pitch, dual-contact FPC connector

The addition of the 6-pin connector extends compatibility to a wider range of Bridgetek EVE development boards while retaining support for boards with a 10-pin CTP interface. Unlike Revision 1.0, neither connector has predefined signal assignments. The required CTP signals must be manually mapped and connected according to the pin assignments of the EVE development board being used.

6.5.2 LCD Module CTP Interface

For connecting to an LCD module's CTP interface, both Revisions 1.0 and 1.1 provide the same FPC connector options:

- 6-pin, 0.5 mm-pitch connector
- 8-pin, 0.5 mm-pitch connector
- 10-pin, 0.5 mm-pitch connector
- 8-pin, 1.0 mm-pitch connector

All connectors support contacts on both sides, allowing FPC cables to be inserted with the contact pads facing either direction, depending on the cable and LCD module configuration. The available pin counts, two commonly used FPC pitches, and dual-contact design enable the adaptor board to support a wide range of CTP connection arrangements used by commercially available LCD modules.

6.5.3 CTP Signal Routing

The CTP connectors on the LCD module and EVE development board may use different pin assignments. To support flexible signal routing, the adaptor board provides JP23 and JP24, both of which are 10-pin, 2.54 mm-pitch headers. These headers provide access to the CTP signals from the EVE development board and LCD module, allowing the required signals to be interconnected with jumper wires. The implementation of JP23 differs between Revisions 1.0 and 1.1, as described below.

Revision 1.0

In Revision 1.0, JP23 has predefined pin assignments corresponding to the CTP signals on CN9, which is designed for the ME817EV CTP interface. JP24 provides access to the LCD module's CTP signals. Use jumper wires between JP23 and JP24 to route the LCD module's CTP signals to the corresponding signals on the ME817EV. Arrange the jumper connections according to the pin assignments of both interfaces.

Refer to Figure 37 for the JP23 pin assignments on Adaptor Board Revision 1.0.

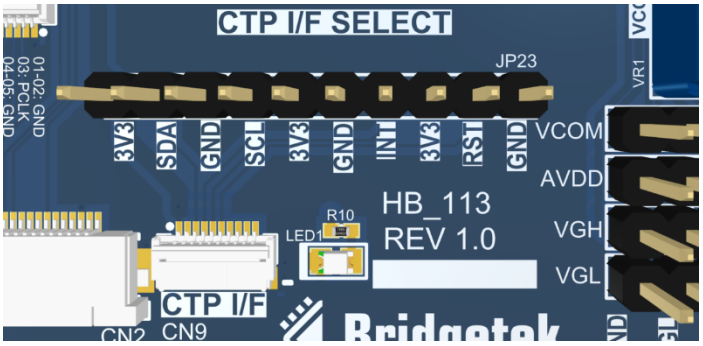


Figure 37 - Adaptor Board Revision 1.0 JP23 Pin Assignments

Copyright © Bridgetek Pte Ltd

Revision 1.1

In Revision 1.1, JP23 does not have predefined pin assignments. Instead, the required CTP signals can be manually assigned and connected according to the CTP interface of the EVE development board being used. This flexible configuration allows JP23 to support various EVE development boards rather than being limited to a fixed signal arrangement. Refer to Figure 38 for the JP23 configuration on Adaptor Board Revision 1.1.

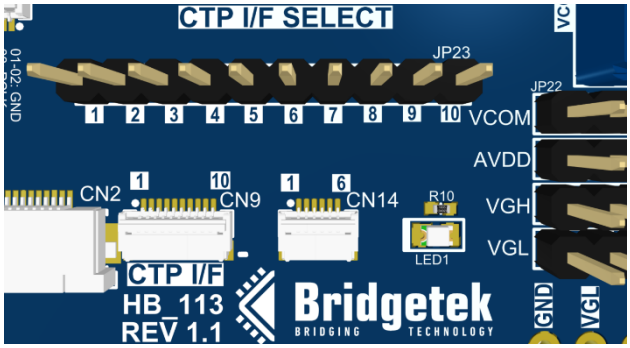


Figure 38 - Adaptor Board Revision 1.1 JP23 Pin Assignments

After connecting the LCD module and EVE development board to the adaptor board, use the supplied jumper wires to connect JP23 and JP24. Arrange the connections to route each required CTP signal from the LCD module to the corresponding signal on the EVE development board's CTP interface.

This bridging arrangement allows individual signals—including the I²C clock (SCL), I²C data (SDA), interrupt, reset, power, and ground—to be mapped according to the requirements of the connected CTP controller. As a result, the LCD module and EVE development board do not need identical CTP connector pin assignments.

The combination of multiple connector formats, dual-contact FPC connectors, and configurable jumper-wire routing enables the adaptor board to support a wide range of CTP configurations without requiring PCB modifications.

6.5.4 CTP Extension Cable

For some LCD modules, the CTP FPC cable may not be long enough to reach the corresponding connector on the adaptor board after the display interface has been connected. In such cases, use a suitable FPC extension to complete the CTP connection. Commonly available extension options are shown in Figure 39 and include:

- FPC extension cable
- FPC extension cable with a connector
- PCB with back-to-back FPC connectors
- PCB with an FPC connector and header footprint

When selecting an extension cable, ensure that its pin count, pitch, and contact orientation are compatible with both the LCD module's CTP FPC interface and the corresponding connector on the adaptor board. Before making the connection, verify the cable orientation and pin-to-pin mapping to prevent incorrect signal routing.



Figure 39 - FPC Extension Options

Copyright © Bridgetek Pte Ltd

Figure 40 shows an example of a capacitive touch panel (CTP) connected to the ME817EV evaluation board through the Generic LCD Adaptor.

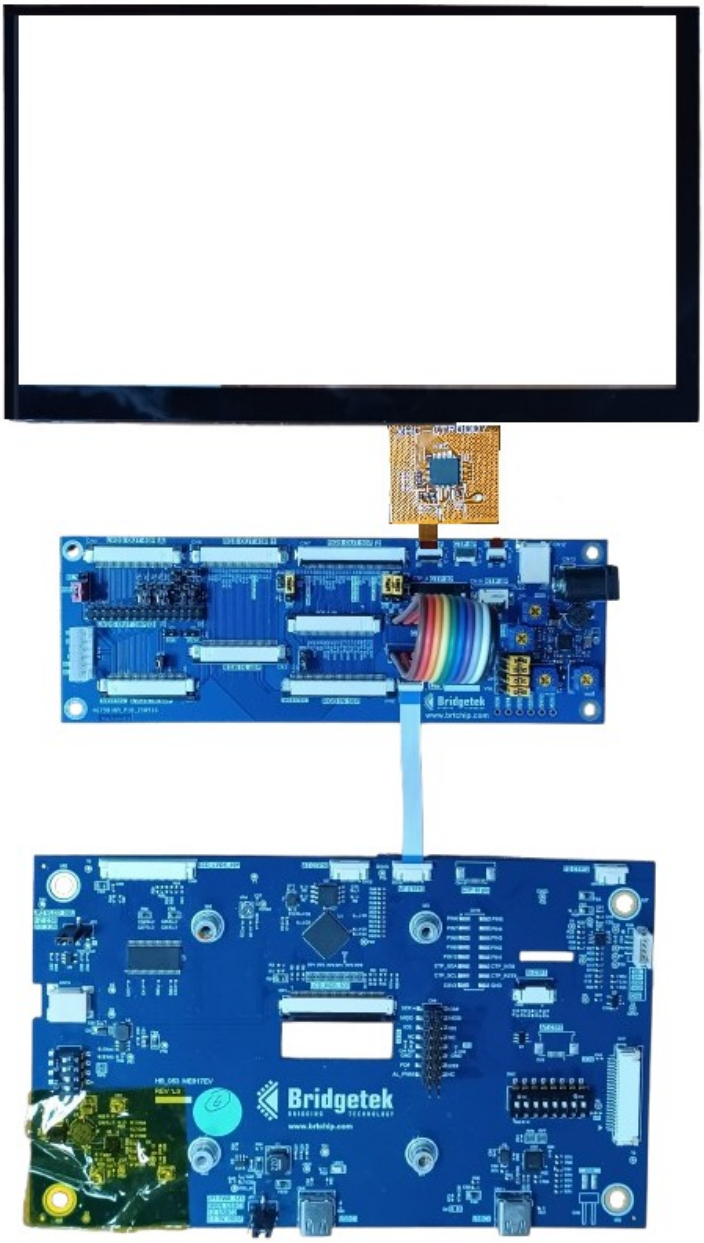


Figure 40 - CTP Setup

Copyright © Bridgetek Pte Ltd

7 Examples

This section provides examples of LCD panels in various sizes and resolutions connected through different output connectors on the ME817EV evaluation board, along with one example using the VM816C50A evaluation board.

LCD panels with various connector interfaces and specifications were selected for testing with the adaptor board. Tables 20, 21, and 22 list the devices under test, their pin definitions, and the corresponding adaptor-board configurations.

Example	Interface	Size (Inch)	Resolution
1	LVDS	10.1	1280 * 800
2	LVDS	10.4	800 * 600
3	RGB	4.3	480 * 272
4	RGB	7.0	1024 * 600
5	RGB	7.0	800 * 480
6	RGB	7.0	800 * 480
7	RGB	7.0	800 * 480

Table 28 - Specifications of Devices Under Test

Example	Source Evaluation board	EVE Chip	Interface	Adaptor Board Configuration			
				Input Connector		Output Connector Type	Label
1	ME817EV	BT817	LVDS	LVDS IN_40P	CN1	LVDS_OUT_40P, TC	A
2	ME817EV	BT817	LVDS	LVDS IN_40P	CN1	LVDS_OUT_20P	B
3	ME817EV	BT817	RGB	RGB IN_50P	CN2	RGB_OUT_40P, TC	1
4	ME817EV	BT817	RGB	RGB IN_50P	CN2	RGB_OUT_50P, TC & BC	2
5	ME817EV	BT817	RGB	RGB IN_50P	CN2	RGB_OUT_40P, TC & BC	3
6	VM816C50A	BT816	RGB	RGB IN_40P	CN3	RGB_OUT_40P, TC & BC	3
7	IDM2040-7A	BT817	RGB	RGB IN_50P	CN2	RGB_OUT_50P, TC & BC	2

Table 29 - Test Setup Configuration

*Note: TC -Top Contact, BC- Bottom Contact.

Copyright © Bridgetek Pte Ltd

Example		1		2		3		4		5		6
Matching Connector		A		B		1		2		3		3
	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
	1	VCOM (3V)	1	VDD	1	VLED-	1	VLED+	1	GND	1	GND
	2	VDD	2	VDD	2	VLED+	2	VLED+	2	GND	2	GND
	3	VDD	3	GND	3	GND	3	VLED-	3	NC	3	NC
	4	NC	4	DPS	4	VDD	4	VLED-	4	VDD	4	VDD
	5	NC	5	Rxin0-	5	R0	5	GND	5	VDD	5	VDD
	6	NC	6	Rxin0+	6	R1	6	VCOM_3V8	6	VDD	6	VDD
	7	GND	7	GND	7	R2	7	VDD	7	VDD	7	VDD
	8	Rxin0-	8	Rxin1-	8	R3	8	MODE	8	NC	8	NC
	9	Rxin0+	9	Rxin1+	9	R4	9	DE	9	DEN	9	DEN
	10	GND	10	GND	10	R5	10	VS	10	GND	10	GND
	11	Rxin1-	11	Rxin2-	11	R6	11	HS	11	GND	11	GND
	12	Rxin1+	12	Rxin2+	12	R7	12	B7	12	GND	12	GND
	13	GND	13	GND	13	G0	13	B6	13	B5	13	B5
	14	Rxin2-	14	RxCLK-	14	G1	14	B5	14	B4	14	B4
	15	Rxin2+	15	RxCLK+	15	G2	15	B4	15	B3	15	B3
	16	GND	16	GND	16	G3	16	B3	16	GND	16	GND
	17	RxCLK-	17	Rxin3-	17	G4	17	B2	17	B2	17	B2
	18	RxCLK+	18	Rxin3+	18	G5	18	B1	18	B1	18	B1
	19	GND	19	RESERVE	19	G6	19	B0	19	B0	19	B0
	20	Rxin3-	20	SEL68	20	G7	20	G7	20	GND	20	GND
	21	Rxin3+			21	B0	21	G6	21	G5	21	G5
	22	GND			22	B1	22	G5	22	G4	22	G4
	23	NC			23	B2	23	G4	23	G3	23	G3
	24	NC			24	B3	24	G3	24	GND	24	GND
	25	GND			25	B4	25	G2	25	G2	25	G2
	26	NC			26	B5	26	G1	26	G1	26	G1
	27	LED_PWM			27	B6	27	G0	27	G0	27	G0
	28	NC			28	B7	28	R7	28	GND	28	GND
	29	AVDD (8V2)			29	GND	29	R6	29	R5	29	R5
	30	GND			30	PCLK	30	R5	30	R4	30	R4
	31	VLED-			31	DISP	31	R4	31	R3	31	R3
	32	VLED-			32	HS	32	R3	32	GND	32	GND
	33	NC			33	VS	33	R2	33	R2	33	R2
	34	NC			34	DE	34	R1	34	R1	34	R1
	35	VGL (-7)			35	NC	35	R0	35	R0	35	R0
	36	NC			36	GND	36	GND	36	GND	36	GND
	37	CABC_EN			37	NC	37	DCLK	37	GND	37	GND
	38	VGH (22V)			38	NC	38	GND	38	DCLK	38	DCLK
	39	VLED+			39	NC	39	L/R	39	GND	39	GND
	40	VLED+			40	NC	40	U/D	40	GND	40	GND
							41	VGH_18V				
							42	VGL_-6V				
							43	AVDD_9V6				
							44	RESET				
							45	NC				
							46	VCOM_3V8				
							47	DITHUB				
							48	GND				
							49	NC				
							50	NC				

Figure 41 - DUT Pin Definition

Copyright © Bridgetek Pte Ltd

7.1 Example 1: Connecting an LVDS Panel via Connector A

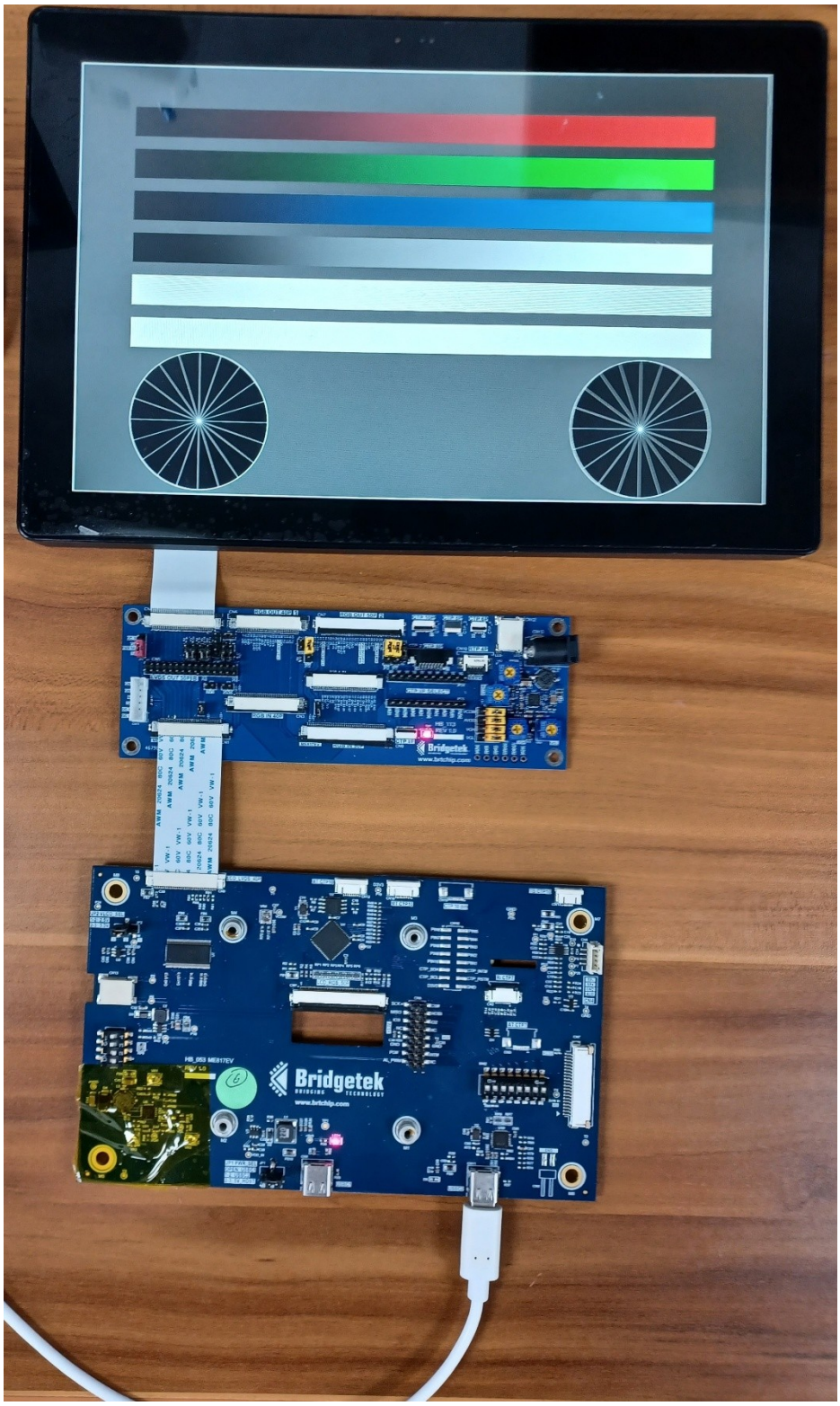


Figure 42 - Connecting an LVDS LCD to 40-Pin FPC Connector A

Copyright © Bridgetek Pte Ltd

7.2 Example 2: Connecting an LVDS Panel via Connector B

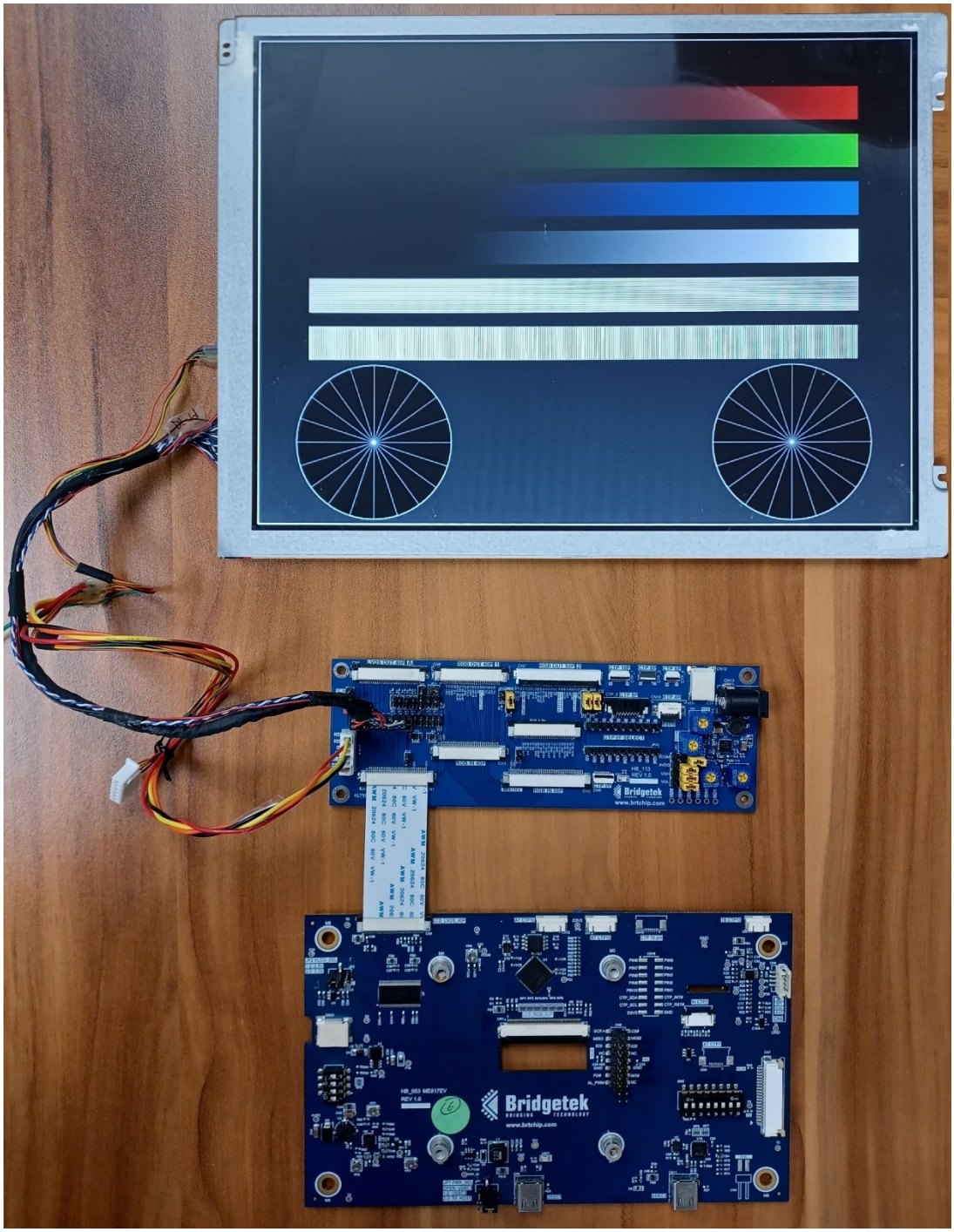


Figure 43 - Connecting an LVDS LCD to 20-Pin Header Connector B

Copyright © Bridgetek Pte Ltd

7.3 Example 3: Connecting an RGB Panel via Connector 1

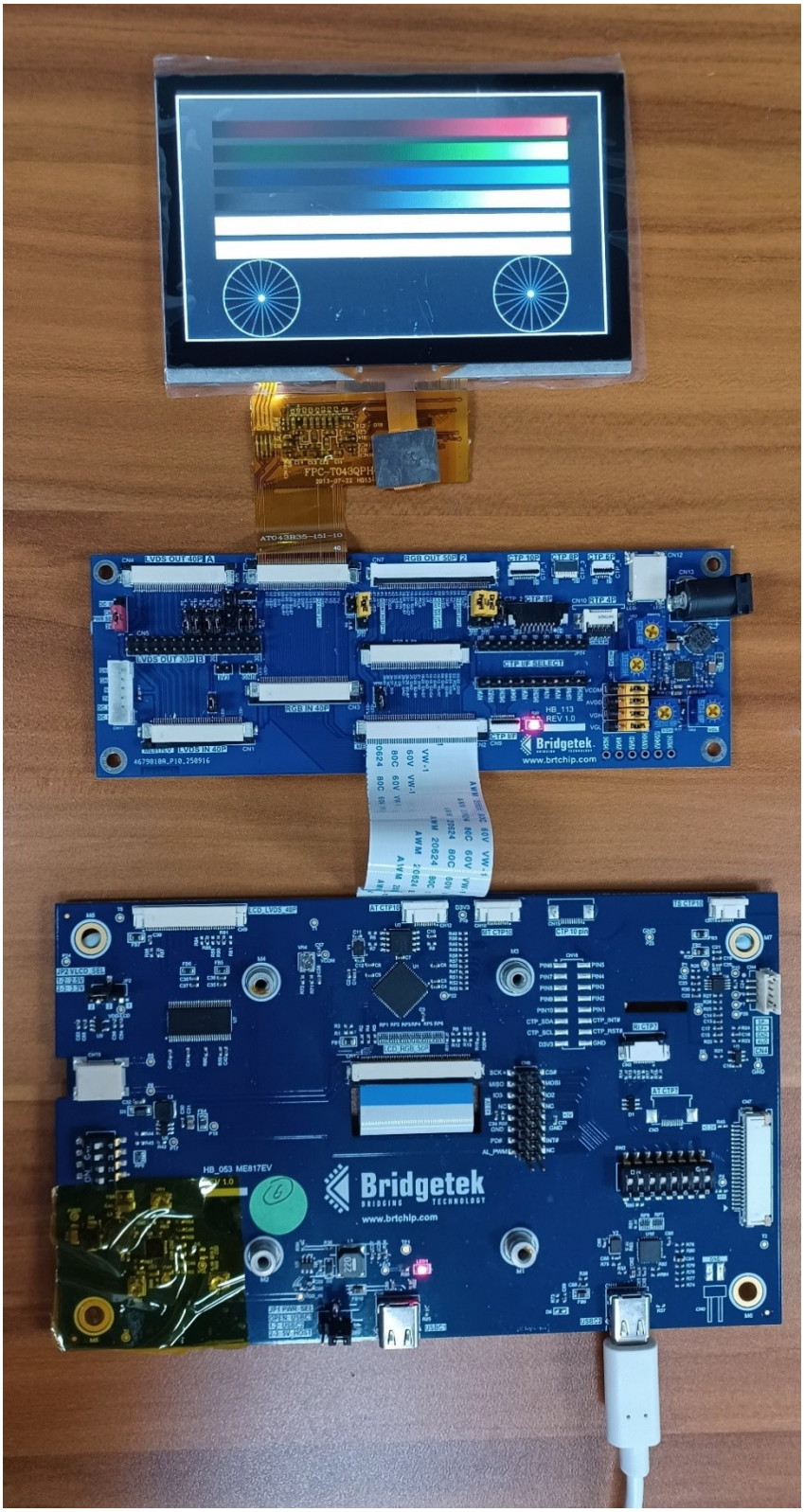


Figure 44 - Connecting an RGB LCD to 40-Pin FPC Connector 1

Copyright © Bridgetek Pte Ltd

7.4 Example 4: Connecting an RGB Panel via Connector 2

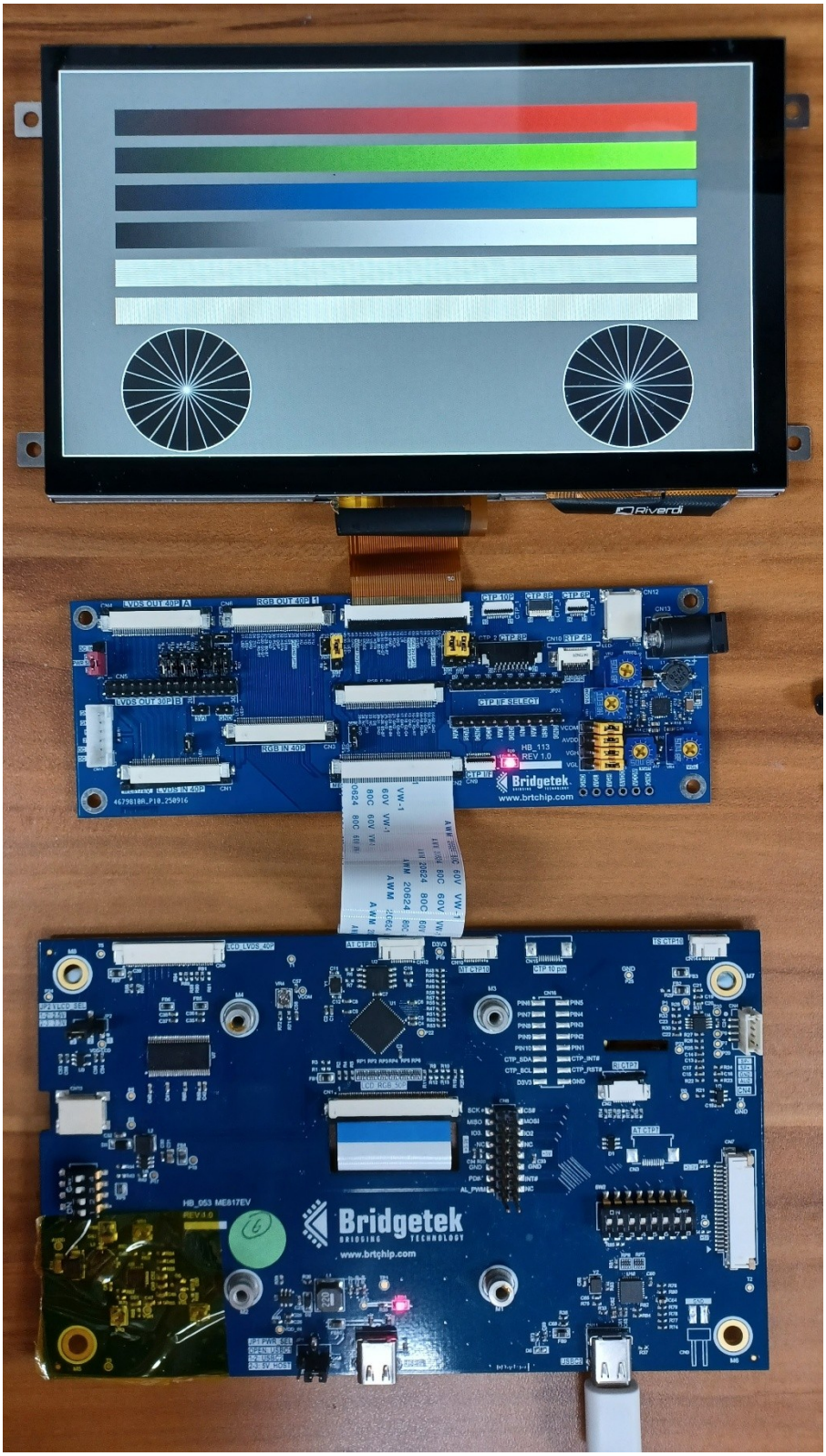


Figure 45 - Connecting an RGB LCD to 50-Pin FPC Connector 2

Copyright © Bridgetek Pte Ltd

7.5 Example 5: Connecting an RGB Panel via Connector 3

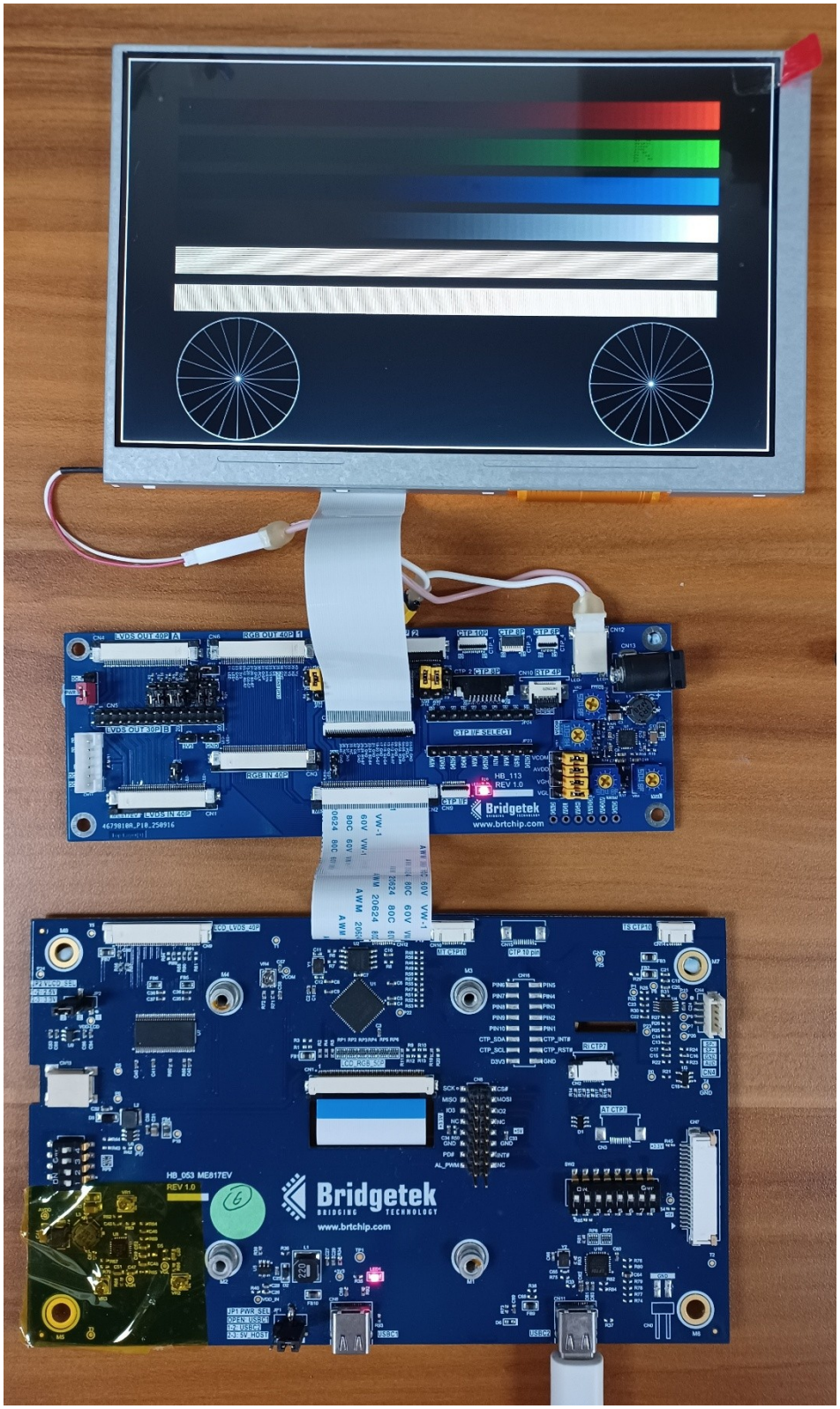


Figure 46 - Connecting a 6-Bit RGB LCD to 50-Pin FPC Connector 3

Copyright © Bridgetek Pte Ltd

7.6 Example 6: Using the VM816CU50A as the Input Source

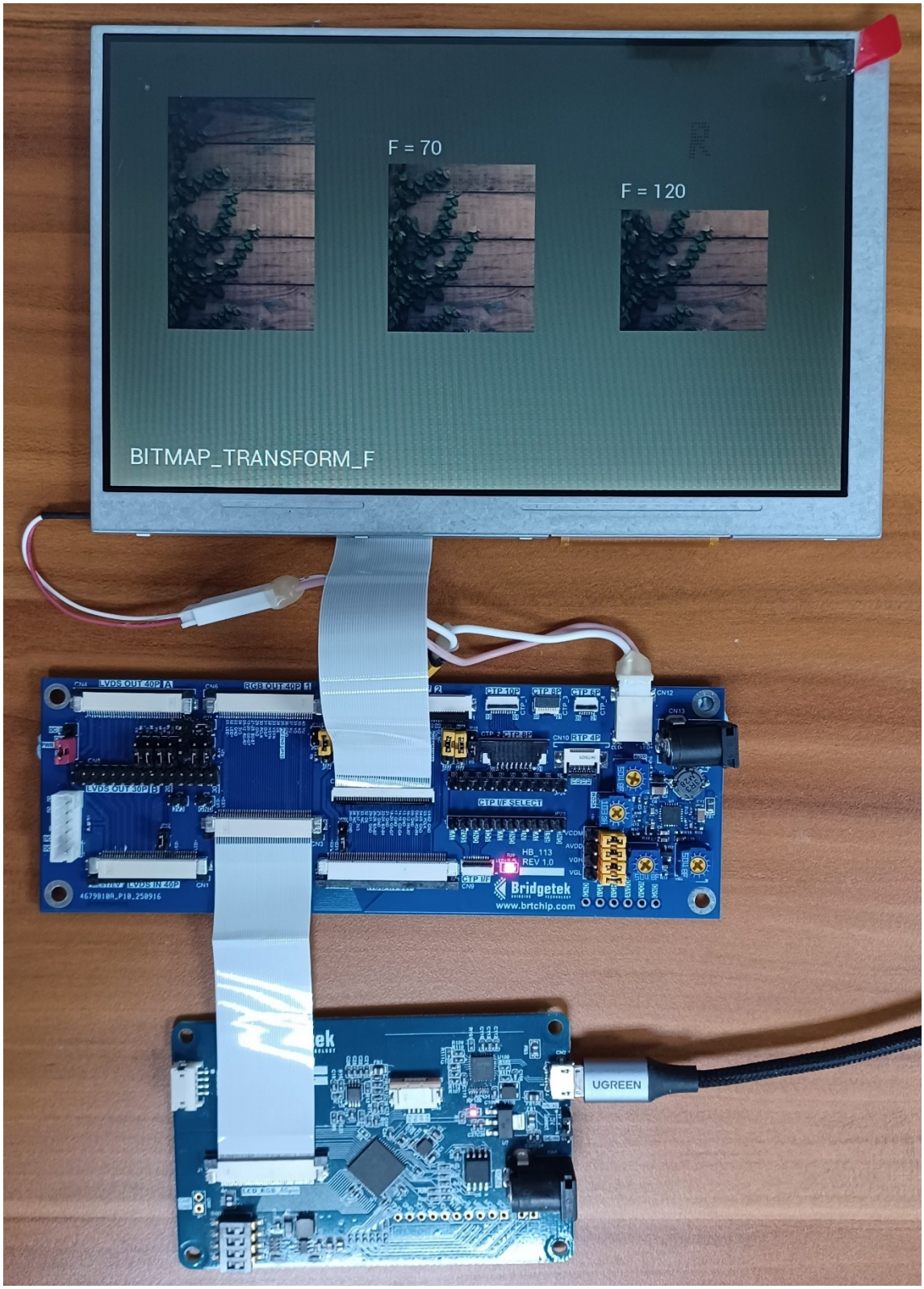


Figure 47 - VM816CU0A Evaluation Board as the Input Source

Copyright © Bridgetek Pte Ltd

7.7 Example 7: Using the IDM2040-7A as the Input Source

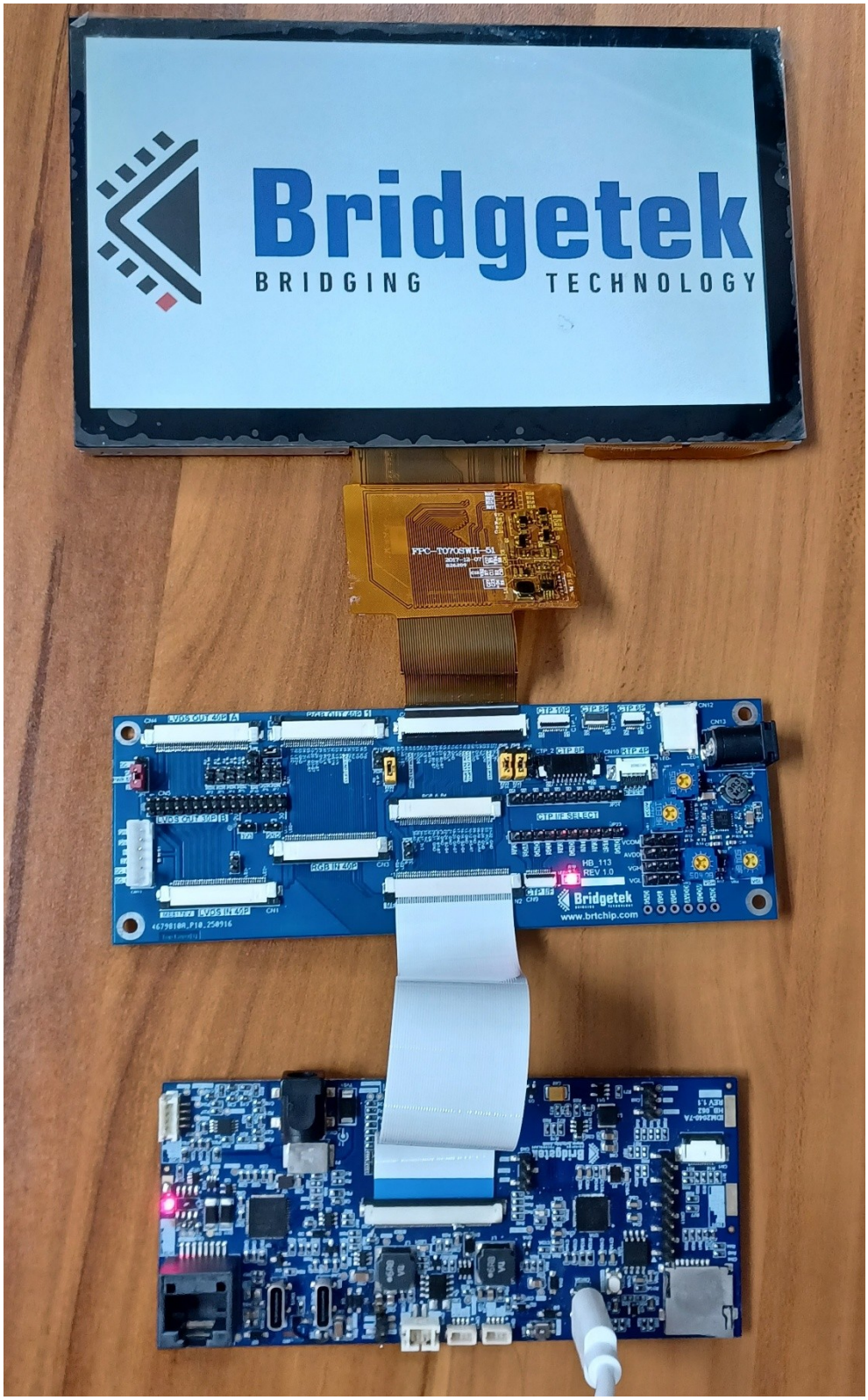


Figure 48 - IDM2040-7A Development Board as the Input Source

Copyright © Bridgetek Pte Ltd

8 Electrical Specifications

Parameter		MIN	TYP	MAX	UNIT
DC_IN	Input voltage range			28	V
D3V3	Output voltage range	3.1	3.3	3.5	V
V_{oh}	Output Voltage High	2.4	-	-	V
V_{ol}	Output Voltage Low	-	-	0.4	V
V_{ih}	Input High Voltage	2.0	-	-	V
V_{il}	Input Low Voltage	-	-	0.8	V

Table 30 - Operating Voltage

Copyright © Bridgetek Pte Ltd

9 Mechanical Dimensions

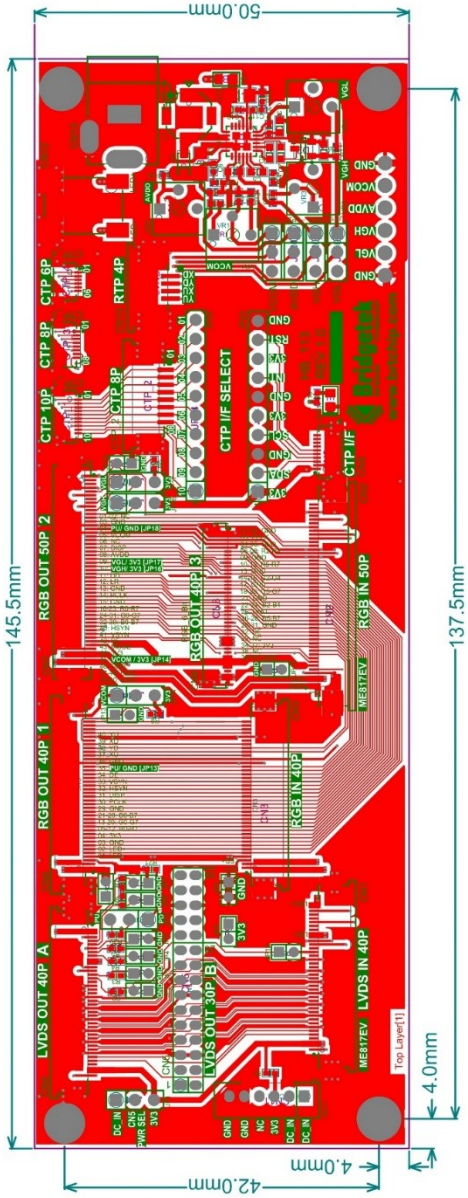


Figure 49 - VA-1001-01A PCB Dimensions

Copyright © Bridgetek Pte Ltd

10 Software Setup Information

Bridgetek provides a suite of free tools to help developers test and create user interfaces using EVE-series graphics controller ICs. These tools include **EVE Screen Designer (ESD)**, **EVE Screen Editor (ESE)**, and **EVE Asset Builder (EAB)**, all of which can be downloaded here. The examples described in Section 7 Examples were tested using **ESE**, which simplifies evaluation-kit configuration and device-under-test (DUT) testing.

The following section provides a step-by-step example of configuring the hardware and using ESE to display a test-card image. In this example, the ME817EV drives an RGB panel through Connector 2, as described in Example 4.

10.1 Operating Example

Step 1: Set the yellow jumpers on JP19–JP22 of the VA-1001-01A-Generic adaptor board to the positions shown below. Connect the adaptor board to the ME817EV and then power the evaluation board through its USB-C connector.

Note: Do not connect the LCD panel at this stage.

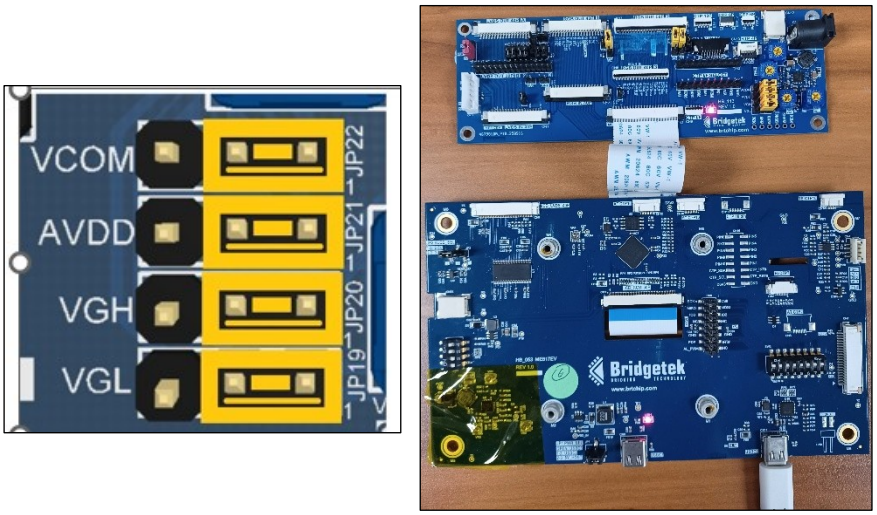


Figure 50 - Selecting the Bias-Voltage Source and Powering Up the Adaptor Board

Step 2: Adjust the variable resistors to set the bias voltages required by the LCD specifications, as described in Section 6.2 Adjusting the LCD Bias Voltages. For this example, set AVDD to 9.6 V, VGH to 18 V, VGL to −6 V, and VCOM to 3.8 V.

Step 3: Power off the adaptor board by disconnecting the USB cable from the ME817EV. Connect the LCD panel to the adaptor board and then restore power by reconnecting the USB cable to the ME817EV evaluation board.

Step 4: Open the Windows applications menu, search for **EVE Screen Editor**, and launch the application.



Figure 51 - EVE Screen Editor Application

Step 5: When ESE starts, the default page appears, as shown in **Figure 52**.

Copyright © Bridgetek Pte Ltd

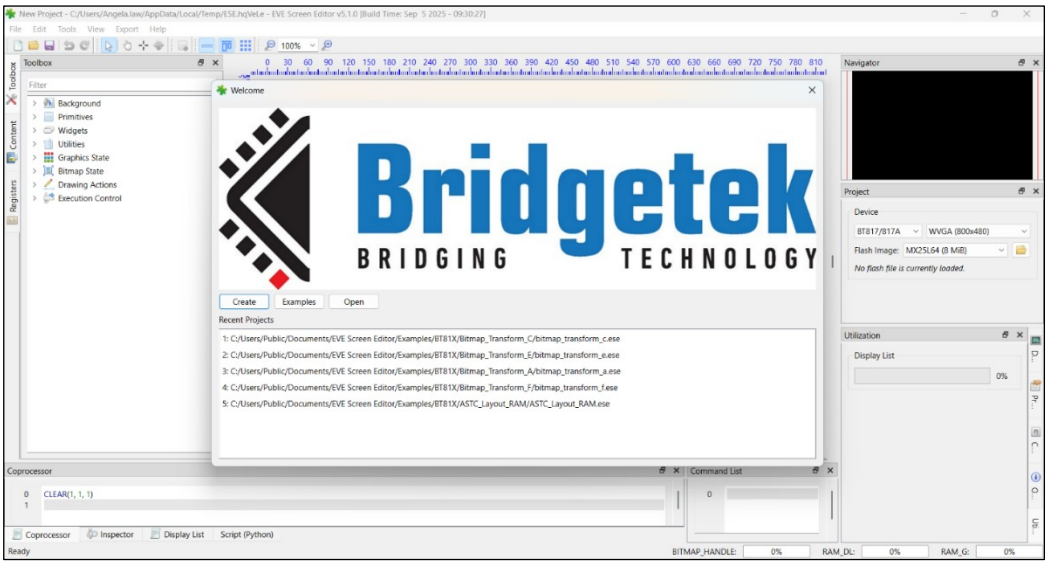


Figure 52 - ESE Default Page

Step 6: Close the default page. The main operating page then appears, as shown in Figure 53.

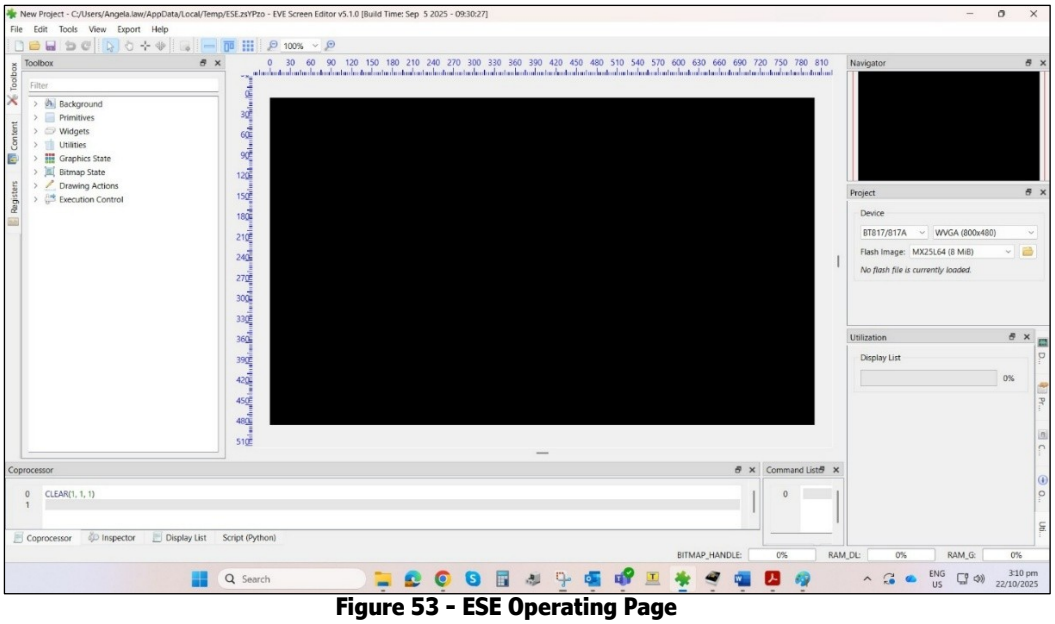


Figure 53 - ESE Operating Page

Step 7: Configure the device for the evaluation board and LCD by selecting **BT817/817A** as the device and **WSVGA (1024 × 600)** as the display resolution, as shown in Figure 54.

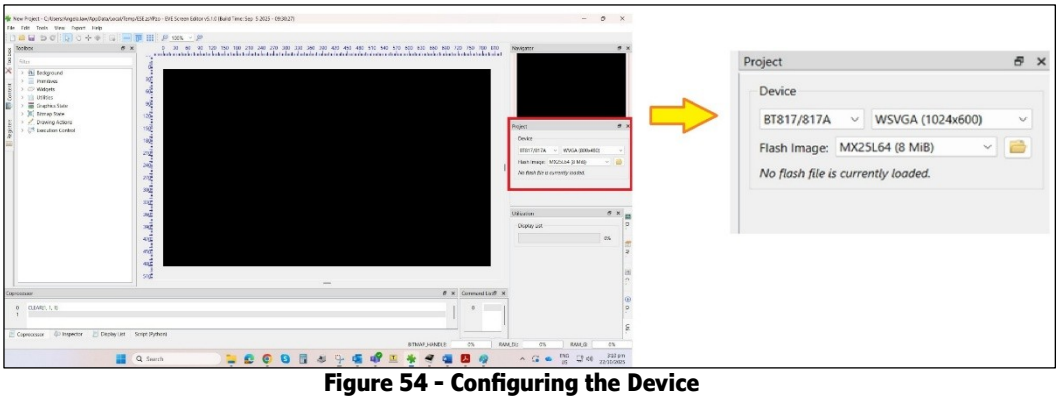


Figure 54 - Configuring the Device

Copyright © Bridgetek Pte Ltd

Step 8: To display the built-in EVE test card, enter **"cmd_testcard"** in the **Coprocessor** window. The test card appears after the command is executed.

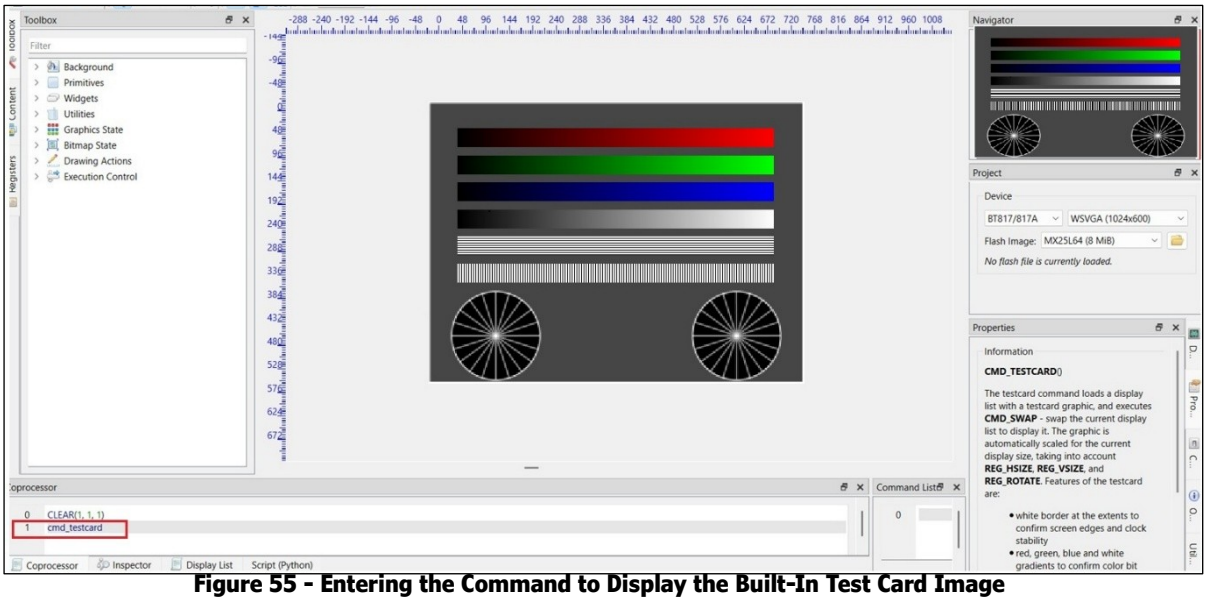


Figure 55 - Entering the Command to Display the Built-In Test Card Image

Step 9: Select **Devices** to view the devices detected for communication with the EVE chip. In this example, the onboard **FT4222 A bridge IC** of the **ME817EV** is detected, as shown in Figure 56.

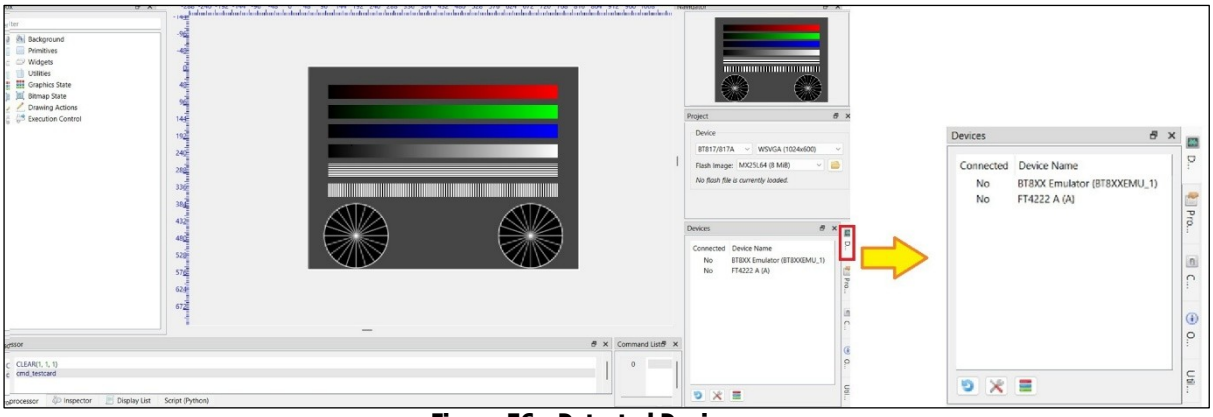


Figure 56 - Detected Devices

Step 10: Select the **FT4222 A** device to display the **Connect** button. Click **Connect** to establish communication with the EVE chip. The available access modes, including **Write to RAM_G and RAM_DL** and **Write to RAM_G and RAM_CMD**, will then appear for selection.

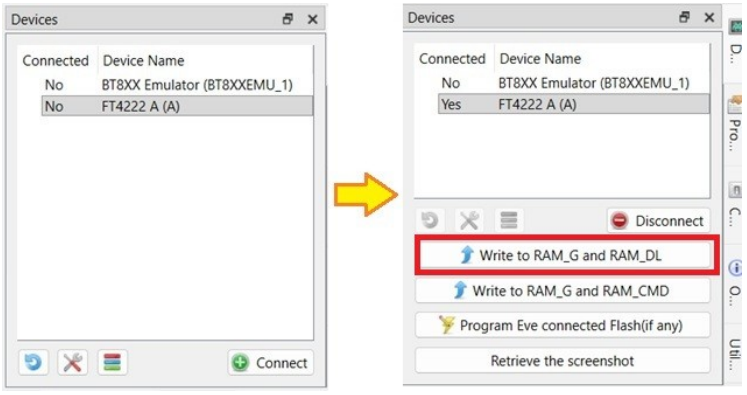


Figure 57 - Detected Communication Device and Available Access Modes

Copyright © Bridgetek Pte Ltd

Step 11: Select **Write to RAM_G and RAM_DL** to display the test card image using the EVE chip's internal RAM.

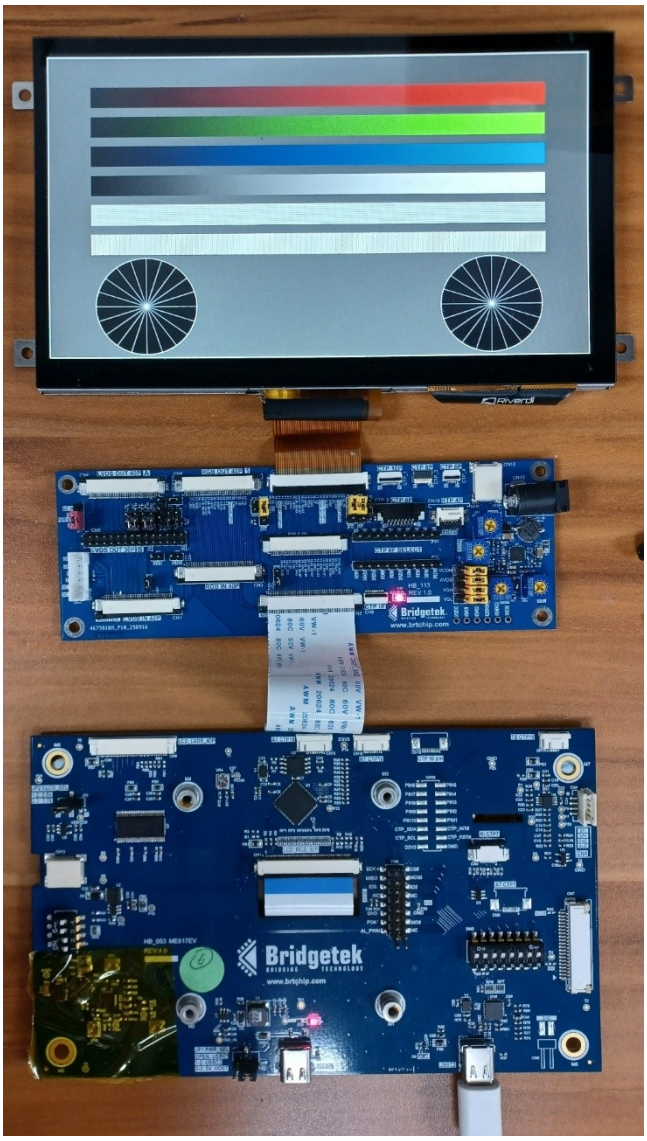


Figure 58 - Built-In Test Card Image Displayed

Note: For EVE ICs that do not include a built-in test card image, use an image provided with the ESE application, as demonstrated in Example 6: Using the VM816CU50A as the Input Source.

Copyright © Bridgetek Pte Ltd

11 Disclaimer Notice: Use of Third-Party Software or Websites

We may recommend software, websites, or other resources owned or operated by third parties and may provide hyperlinks or other means of accessing them. Although we endeavour to recommend helpful and trustworthy resources, we do not endorse, approve, monitor, or guarantee any third-party software, information, products, or services. We are not responsible for the content or accuracy of third-party resources, subsequent changes to them, or any loss or damage arising from their use or from the failure of any products or services they provide.

Third-party resources are recommended on an “as is” basis. When accessing or using such resources, you are subject to the third party’s terms, licenses, privacy policies, and security practices, which may differ from ours. You should review and understand these policies and terms, as they govern your use of the third-party resource.

Copyright © Bridgetek Pte Ltd

12 Contact Information

Refer to https://brtchip.com/contact-us/ for contact information.

Distributor and Sales Representatives

Please visit the Distribution Network – IC & Module (brtchip.com) page for the contact details of our distributor(s) and sales representative(s) in your country.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any Bridgetek Pte Ltd (BRTChip) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested Bridgetek devices and other materials) is provided for reference only. While Bridgetek has taken care to assure it is accurate, this information is subject to customer confirmation, and Bridgetek disclaims all liability for system designs and for any applications assistance provided by Bridgetek. Use of Bridgetek devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless Bridgetek from all damages, claims, suits, or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. Bridgetek Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-05, Singapore 536464. Singapore Registered Company Number: 201542387H.

Copyright © Bridgetek Pte Ltd

Appendix A - References

Document References

TPS65145

ME817EV Datasheet

Acronyms and Abbreviations

Terms	Description
CTP	Capacitive Touch Panel
DC	Direct Current
EAB	EVE Asset Builder
ESD	EVE Screen Designer
ESE	EVE Screen Editor
EVE	Embedded Video Engine
FPC	Flexible Printed Circuit
IC	Integrated Circuit
I^2C	Inter-Integrated Circuit
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LVDS	Low Voltage Differential Signaling
PC	Personal Computer
PCB	Printed Circuit Board
PCBA	Printed Circuit Board Assembled
PWM	Pulse Width Modulation
RGB	Red, Green Blue
RTP	Resistive Touch Panel
TFT	Thin-Film Transistor
USB	Universal Serial Bus

Copyright © Bridgetek Pte Ltd

Appendix B - List of Figures and Tables

List of Figures

Figure 1 - VA-1001-01A PCBA – Front View 6
Figure 2 - VA-1001-01A PCBA – Back View 6
Figure 3 - VA-1001-01A PCBA – Top Layer 7
Figure 4 - VA-1001-01A PCBA – Bottom Layer 7
Figure 5 - RGB Interface 15
Figure 6 - LVDS and Touch Interface 16
Figure 7 - Biasing Voltage Regulator 17
Figure 8 - Assembly Drawing 18
Figure 9 - VA-1001-01A with ME817EV Hardware Setup 19
Figure 10 - VA-1001-01A with VM816C50A Hardware Setup 19
Figure 11 - JP1 Location 24
Figure 12 - JP13 Location 24
Figure 13 - Header Location 25
Figure 14 - Header Location 25
Figure 15 - Capacitive Touch Interface Configuration 26
Figure 16 - PCB Functional Overview 26
Figure 17 - LVDS Output Connector A Pin Assignments and Configuration Options 27
Figure 18 - LVDS Output Connector A Pin Orientation 28
Figure 19 - LVDS Output Connector B Pin Assignments and Configuration Options 28
Figure 20 - LVDS Output Connector B Pin Orientation 28
Figure 21 - RGB Output Connector 1 Pin Assignments and Configuration Options 29
Figure 22 - RGB Output Connector 1 Pin Orientation 29
Figure 23 - RGB Output Connector 2 Pin Assignments and Configuration Options 30
Figure 24 - RGB Output Connector 2 Pin Orientation 30
Figure 25 - RGB Output Connector 3 Pin Assignments 31
Figure 26 - RGB Output Connector 3 Pin Orientation 31
Figure 27 - Complete Pin Assignments for RGB and LVDS Input/Output Connectors 32
Figure 28 - LCD Bias-Voltage Source Selection 33
Figure 29 - LCD Bias-Voltage Test Pads 34
Figure 30 - Trimmer VR2 for AVDD Adjustment 34
Figure 31 - Trimmers VR1, VR3 and VR4 for VCOM, VGH and VGL Adjustment 34
Figure 32 – Location of C47 and R65 on the ME817EV Development Board 35
Figure 33 - LVDS LCD Panel Connection via Connector A 36
Figure 34 - LVDS LCD Panel Connection via Connector B 37
Figure 35 - RGB LCD Panel Connection via Connector 1 38
Figure 36 - RGB LCD Panel Connection via Connector 2 39
Figure 37 - Adaptor Board Revision 1.0 JP23 Pin Assignments 40
Figure 38 - Adaptor Board Revision 1.1 JP23 Pin Assignments 41
Figure 39 - FPC Extension Options 41
Figure 40 - CTP Setup 42
Figure 41 - DUT Pin Definition 44
Figure 42 - Connecting an LVDS LCD to 40-Pin FPC Connector A 45
Figure 43 - Connecting an LVDS LCD to 20-Pin Header Connector B 46
Figure 44 - Connecting an RGB LCD to 40-Pin FPC Connector 1 47
Figure 45 - Connecting an RGB LCD to 50-Pin FPC Connector 2 48
Figure 46 - Connecting a 6-Bit RGB LCD to 50-Pin FPC Connector 3 49
Figure 47 - VM816CU0A Evaluation Board as the Input Source 50
Figure 48 - IDM2040-7A Development Board as the Input Source 51
Figure 49 - VA-1001-01A PCB Dimensions 53
Figure 50 - Selecting the Bias-Voltage Source and Powering Up the Adaptor Board 54
Figure 51 - EVE Screen Editor Application 54
Figure 52 - ESE Default Page 55
Figure 53 - ESE Operating Page 55

Copyright © Bridgetek Pte Ltd

Figure 54 - Configuring the Device 55
Figure 55 - Entering the Command to Display the Built-In Test Card Image 56
Figure 56 - Detected Devices 56
Figure 57 - Detected Communication Device and Available Access Modes 56
Figure 58 - Built-In Test Card Image Displayed 57

List of Tables

Table 1 - Part Numbers / Ordering Information 5
Table 2 - CN1 Pinout 8
Table 3 - CN2 Pinout 9
Table 4 - CN3 Pinout 9
Table 5 - CN4 Pinout 10
Table 6 - CN5 Pinout 10
Table 7 - CN6 Pinout 11
Table 8 - CN7 Pinout 12
Table 9 - CN8 Pinout 12
Table 10 - CN9 Pinout 12
Table 11 - CN9 Pinout 12
Table 12 - CN10 Pinout 13
Table 13 - CN11 Pinout 13
Table 14 - CN12 Pinout 13
Table 15 - CN14 Pinout 13
Table 16 - CTP_1 Pinout 13
Table 17 - CTP_2 Pinout 13
Table 18 - CTP_3 Pinout 14
Table 19 - CTP_4 Pinout 14
Table 20 - LCD Power Supply Regulator Mode Selection 14
Table 21 - LVDS Output Connector A Pin Configuration 23
Table 22 - LVDS Output Connector B Power-Source Selection 24
Table 23 - RGB Output Connector 1 Pin-Configuration Selection 24
Table 24 - RGB Output Connector 2 Pin-Configuration Selection 24
Table 25 - LCD Bias-Voltage Source Selection 25
Table 26 - Capacitive Touch-Signal Connection 25
Table 27 - VA-1001-01A Functional Sections 26
Table 28 - Specifications of Devices Under Test 43
Table 29 - Test Setup Configuration 43
Table 30 - Operating Voltage 52

Copyright © Bridgetek Pte Ltd

Appendix C - Revision History

Document Title: VA-1001-01A Datasheet

Document Reference No.: BRT_000481

Clearance No.: BRT#268

Product Page: https://brtchip.com/product/va-1001-01a/

Document Feedback: Send Feedback

Revision	Changes	Date
1.0	Initial release	25-11-2025
Version 1.1	1. Updated the CN9 pinout to reflect the changes introduced in PCB Revision 1.1. 2. Added pinout definition for CTP 1-4 and JP25 (added in PCB rev 1.1) 3. Updated Section 5.4 - "Touch Panel Interfaces" to reflect addition of new 6P (CN14) CTP connector for interface to EVE dev. boards. 4. Revised Section 6.5 - "Connecting Capacitive Touch Panel to EVE Evaluation Boards via the Adapter Board," to include the new 6-pin connector introduced in PCB Rev. 1.1. Also added details on CTP extension solutions 5. Update schematics to revision 1.1. 6. Updated Section 6.2 – "Adjusting the LCD Bias Voltages" to include the addition of JP25 in PCB Revision 1.1 for selecting between doubler and Tripler modes. 7. Updated product image (first page) PCB layout and assembly drawing to rev 1.1. 8. Added Figure 27 showing the complete pin assignments for RGB and LVDS Input/Output connectors to facilitate correct cable connections and improve the overall user experience. Applied new datasheet template	14-10-2026

Copyright © Bridgetek Pte Ltd