TFT MODULE SPECIFICATION

RVT70HSPFWN00

Raspberry Pi5, MIPI DSI, IPS 7.0” LCD TFT display datasheet
Rev. 1.0
2025-12-19

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ITEM	CONTENTS	UNIT
LCD Type	TFT/Transmissive/Normally Black/IPS	/
Size	7.0	Inch
Viewing Direction	Free	/
Outside Dimensions (W x H x D)	181.60 x 100.60 x 22.09	mm
Active Area (W x H)	154.21 x 85.92	mm
Pixel Pitch (W x H)	0.1506 x 0.1432	mm
Resolution	1024 x 600	/
Brightness	1000	cd/m^2
Color Depth	16.7 M	/
Pixel Arrangement	RGB Vertical Stripe	/
Interface	Raspberry Pi 5(RPi-IO) + DSI	/
With/Without Touch	Without Touch Panel	/
Supply Voltage for Module	5.0 (USB-C 5A) or 7.5-36 (DC input 25W)	V
Weight	211	g

Note 1. RoHS3 compliant

Note 2. LCM weight tolerance: ± 5%.

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2025-12-19	Initial release	

2. CONTENTS

3. MODULE CLASSIFICATION INFORMATION

RV	T	70	H	S	P	F	W	N	00
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

NO.	PARAMETER	SYMBOL
1.	BRAND	RV – Riverdi
2.	PRODUCT TYPE	T – TFT Standard
3.	DISPLAY SIZE	70 – 7.0”
4.	MODEL SERIAL NO.	H – High Brightness, IPS
5.	RESOLUTION	S – 1024 x 600 px
6.	INTERFACE	P – Raspberry Pi 5
7.	FRAME	F – With Mounting Metal Frame
8.	BACKLIGHT TYPE	W – LED White
9.	TOUCH PANEL	N – Without Touch Panel
10.	VERSION	00 – version

4. ASSEMBLY

4.1 Mounting Frame

For dimensions 3.5”, 4.3”, 5.0”, 7.0”, 10.1”, 12.1” and 15.6”, the product with mounting frame version is available. Thanks to the four catches attached to the side, frame provides strong assembly to the surface by mounting element (like the screw, see Figure 1). The frames are specially designed to fit Riverdi products perfectly. The diameter of the mounting hole is 3.5mm.

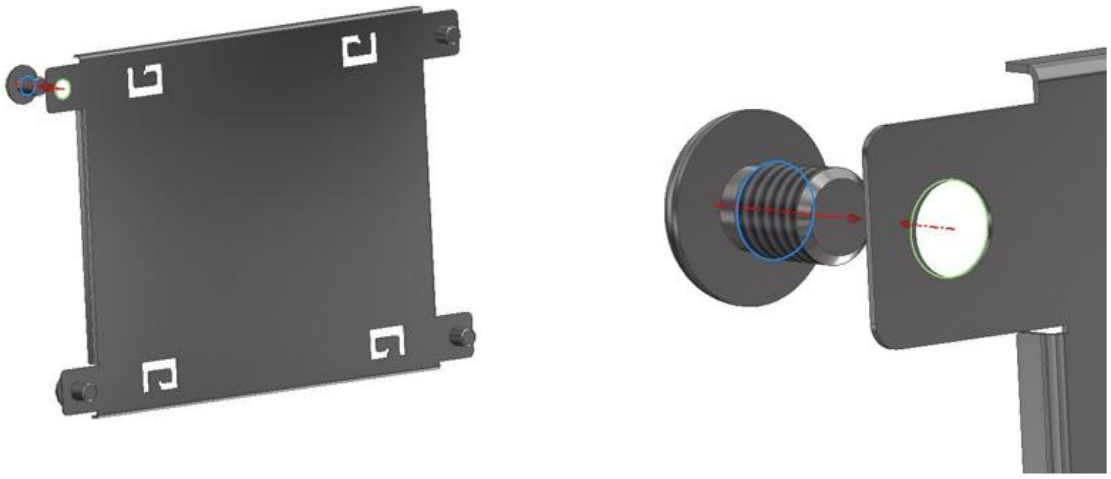
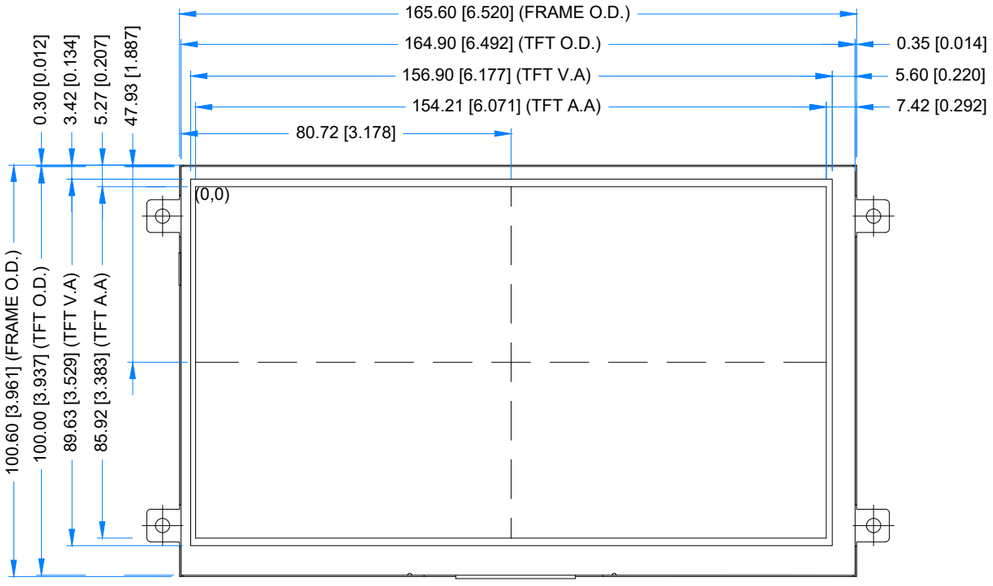
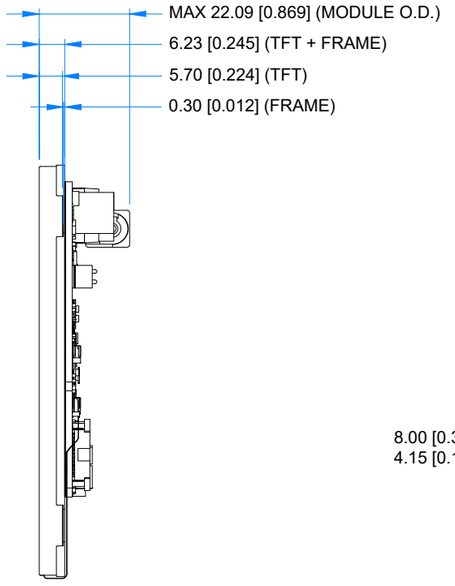
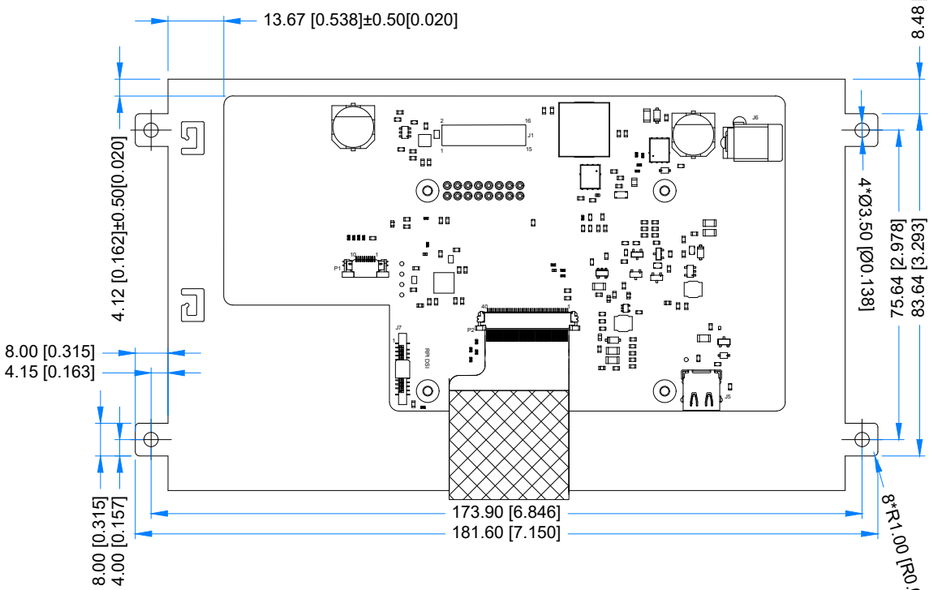


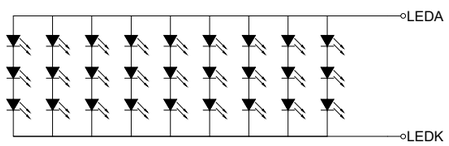
Figure 1. Mounting Frame

Revision:	Changes:	Date:
1.0	Initial Case	2025.12.15









LED Diagram Circuit

TFT NOTES:
1. DISPLAY TYPE: TRANSMISSIVE, NORMALLY BLACK, IPS
2. RESOLUTION: 1024x600
3. VIEWING ANGLE: FREE
4. INTERFACE: MIPI DSI
5. DRIVER IC ON BOARD: SN65DSI83
6. SUPPLY VOLTAGE FOR MODULE: 5.0V(USB), 7.5-36V(DC INPUT)
7. RASPBERRY PI COMPATIBLE

GENERAL NOTES:
1. MODULE SURFACE LUMINANCE: 1000cd/m^2
2. OPERATING TEMPERATURE: -20°C ~ 70°C
3. STORAGE TEMPERATURE: -30°C ~ 80°C
4. WITHOUT INDIVIDUAL TOLERANCE: ±0.3mm
5. RoHS COMPLIANT

PN: RVT70HSPFWN00				
SN:				
DRAWN:	M.Stabinski	2025.12.15	1:1.50	
CHECKED:	A.Demko-Karolczuk	2025.12.15	[mm]	
APPR:	M.Wierzbowski	2025.12.15	ISO A3	P. 1 of 1

6. ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage for Module	V_{DD}	-0.5	45	V
Operating Temperature	T_{OP}	-20	70	°C
Storage Temperature	T_{ST}	-30	80	°C
Storage Humidity (@ 25 ± 5°C)	H_{ST}	10	-	% RH
Operating Ambient Humidity (@ 25 ± 5°C)	H_{OP}	10	-	% RH

Note. The above are maximum values. If exceeded, they may cause permanent damage to the unit.

7. ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
USB-C Supply Voltage for Module	V_{USB}	4.8	5.0	5.2	V	
Vin Supply Voltage	V_{IN}	7.5	12	36	V	
V_{IL} Input low voltage	V_{IL}	0	-	0.8	V	
V_{IH} Input high voltage	V_{IH}	2.5	-	3.3	V	
V_{OL} Output low voltage	V_{OL}	-	-	0.4	V	
V_{OH} Output high voltage	V_{OH}	2.9	-	-	V	

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Current drawn from V_{USB} @5.0V	I_{USB}	-	1.3	5.0	A	Note 1,2

Note 1.
MIN, current was measured with BL brightness set to 0%,
TYP, current was measured with BL brightness set to 50%,
MAX, current was measured with BL brightness set to 100% and RPI5 is under maximum load conditions.

Note 2.

Max provided current is absolute max.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Power consumption	P	-	7.8	25	W	Note 1

Note.1 Current drawn please calculate as I=P/V. Based on the power supply value.

5V with power supply 7.8W,

7.8/5 = 1.56A

8. BACKLIGHT ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Lifetime	-	-	50,000	-	hours	Note 1

Note 1. Unless specified, the ambient temperature T_a = 25℃

Note 2. The recommended operating conditions refer to a range in which operation of this product is guaranteed. The operation cannot be guaranteed if the absolute maximum values exceed.

Note 3. If LED is driven by high current, high ambient temperature and humidity condition, the lifetime of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating lifetime is estimated data.

9. ELECTRO-OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	RMK	NOTE
Response Time	Tr+Tf	θ=0° ø=0° Ta=25 °C	-	35	-	ms	FIG 2.	4, 7
Contrast Ratio	Cr		-	800	-	---	FIG 3.	1, 7
Surface Luminance	Lv		-	1000	-	cd/m2		2, 7
Viewing Angle Range	θ	ø = 90°	75	85	-	deg	FIG 4.	6
		ø = 270°	75	85	-	deg		
		ø = 0°	75	85	-	deg		
		ø = 180°	75	85	-	deg		
CIE (x, y) Chromaticity	Rx	θ=0° ø=0° Ta=25 °C	0.578	0.618	0.658	-	FIG 3.	5,7
	Ry		0.489	0.329	0.369	-		
	Gx		0.376	0.416	0.456	-		
	Gy		0.493	0.533	0.573	-		
	Bx		0.071	0.111	0.151	-		
	By		0.108	0.148	0.188	-		
	Wx		0.270	0.310	0.350	-		
	Wy		0.290	0.330	0.370	-		

Note 1. Contrast Ratio (CR) is defined mathematically as below, for more information see Figure 2.

$$\text{Contrast Ratio} = \frac{\text{Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Average Surface Luminance with all black pixels (P1, P2, P3, P4, P5)}}$$

Note 2. Surface luminance is the LCD surface from the surface with all pixels displaying white. For more information see Figure 2.

Lv = Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)

Note 3. The uniformity in surface luminance δ WHITE is determined by measuring luminance at each test position 1 through 5, and then dividing the minimum luminance of 5 points luminance by maximum luminance of 5 points luminance. For more information see Figure 2.

$$\delta \text{ WHITE } = \frac{\text{Minimum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Maximum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}$$

Note 4. Response time is the time required for the display to transition from white to black (Rise Time, Tr) and from black to white (Decay Time, Tf). For additional information see Figure 1. The test equipment is BM-7A.

Note 5. CIE (x, y) chromaticity, the x, y value is determined by measuring luminance at each test position 1 through 5, and then make average value.

Note 6. For TFT module, viewing angle is the angle at which the contrast ratio is greater 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to LCD surface. For more information see Figure 3.

Note 7. Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80). For response time testing, the testing data is based on BM-7A. Instruments for Contrast Ratio, Surface Luminance, Luminance Uniformity, Chromaticity the test data is based on SR-3A.

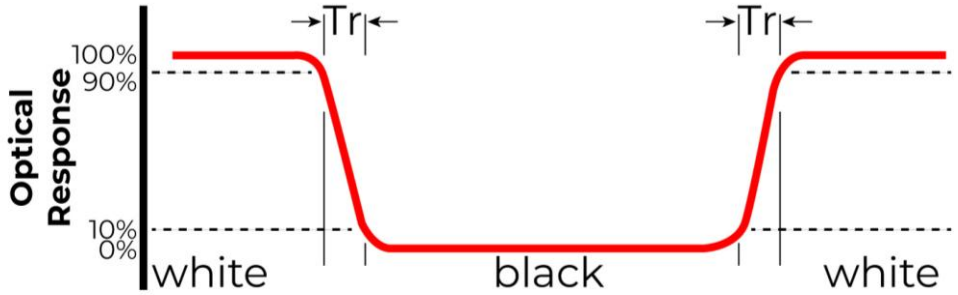
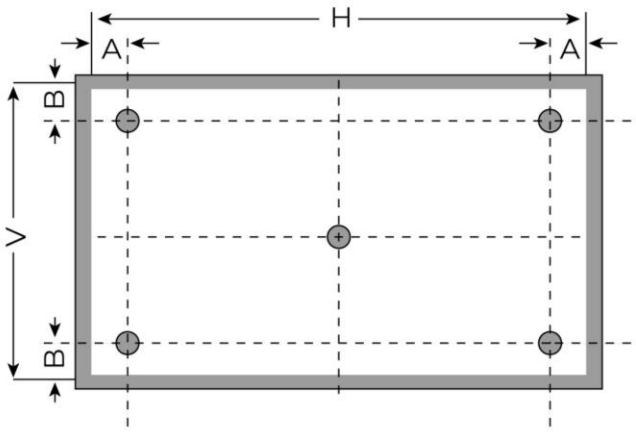


Figure 2. The definition of response time



A: 5mm

B: 5mm

H, V: Active Area

Light spot size ∅=5mm, 500mm distance from the LCD surface to detector lens.

Measurement instrument is SR-3A

Figure 3. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE (x, y) chromaticity

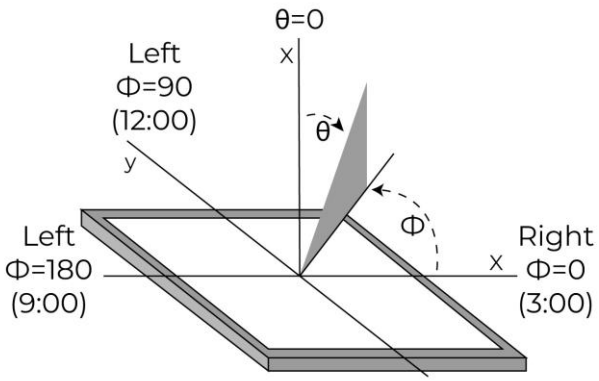


Figure 4. The definition of viewing angle

10. INTERFACES DESCRIPTION

10.1 J7 connector

PIN	SYMBOL	I/O/P	DESCRIPTION	NOTE
1	GND	P	Ground	
2	DSI_D0N	I/O	MIPI DSI differential data pair. (Data lane 0)	
3	DSI_D0P	I/O		
4	GND	P	Ground	
5	DSI_D1N	I	MIPI DSI differential data pair. (Data lane 1)	
6	DSI_D1P	I		
7	GND	P	Ground	
8	DSI_CLKN	I	MIPI DSI differential clock pair	
9	DSI_CLKP	I		
10	GND	P	Ground	
11	DSI_D2N	I	MIPI DSI differential data pair. (Data lane 2)	
12	DSI_D2P	I		
13	GND	P	Ground	
14	DSI_D3N	I	MIPI DSI differential data pair. (Data lane 3)	
15	DSI_D3P	I		
16	GND	P	Ground	
17	NC	-	Not connected	
18	NC	-	Not connected	
19	GND	P	Ground	

20	RPi_DSI_SCL	I/O	RPi Clock signal	
21	RPi_DSI_SDA	I/O	RPi Data signal	
22	VCC	P	Power supply 3.3V	

Note. Matched 22 pins, 0.5 mm pitch, 100 mm long FFC accessory: FFC0522100.

10.2 J1 connector

PIN	SYMBOL	I/O/P	DESCRIPTION	NOTE
1	3.3V	P	Power Supply 3.3V from RPi	
2	5.0V	P	Power Supply 5.0V from DC/DC or USB-C	
3	CTP_SDA	I	Touch Panel data signal	
4	5.0V	P	Power Supply 5.0V from DC/DC or USB-C	
5	CTP_SCL	I	Touch Panel clock signal	
6	GND	P	Ground	
7	CTP_RST	I	Touch Panel reset signal	
8	NC	-	Not connected	
9	GND	P	Ground	
10	NC	-	Not connected	
11	LCD_RES	I	LCD reset signal	
12	BLPWM	I	Backlight PWM	
13	LCD_STBY	I	LCD standby	
14	GND	P	Ground	
15	CTP_INT	I/O	Touch Panel Interrupt	
16	RPi_Bridge_RST	I	RPi bridge reset signal	

Note. This interface is doubled. It has double connection available. Pogo pin and iDC connector J1.

11. TIMING CHARACTERISTICS

The TFT of the module applies Riverdi high brightness, IPS, 7.0” TFT: RVT70HSLFWN00

For detailed information of the display, please refer to the datasheet of display.

PARAMETER	SYMBOL	VALUE			UNIT
		MIN.	TYP.	MAX.	
DCLK frequency (Frame rate 60Hz)	Fclk	40.8	51.2	67.2	MHz
Horizontal display area	Thd		1024		DCLK
HSYNC period time	Th	1114	1344	1400	
HSYNC blanking	Thb+Thfp	90	320	376	
Vertical display area	Tvd		600		H
VSYNC period time	Tv	610	635	800	
VSYNC blanking	Tvb+Tvfp	10	85	200	

12. INSPECTION

Standard acceptance/rejection criteria for TFT module according to document available here.

13. RELIABILITY TEST

NO.	TEST ITEM	TEST CONDITION	NOTE
1	High Temperature Storage	80°C/120 hours	Note 1
2	Low Temperature Storage	-30°C/120 hours	
3	High Temperature Operating	70°C/120 hours	
4	Low Temperature Operating	-20°C/120 hours	
5	High Temperature and High Humidity	40℃, 90%RH, 120Hrs	
7	Thermal Cycling Test (No operation)	-20℃ for 30min, 70℃ for 30 min. 100 cycles. Then test at room temperature after 1 hour	Note 2
8	Vibration Test	Frequency: 10 ÷ 55 Hz. Stroke: 1.5 mm. Sweep: 10Hz ÷ 55Hz ÷ 10 Hz. 2 hours for each direction of X, Y, Z (Total 6 hours)	
9	Package Drop Test	Height: 60 cm 1 corner, 3 edges, 6 surfaces	

Note 1. Sample quantity for each test item is 5 ÷ 10 pcs.

Note 2. The device is kept at room temperature for 2 hours prior to starting the test

14. LEGAL INFORMATION

CE marking is usually obligatory only for a complete end product. Riverdi display modules are semi-finished goods which are used as inputs to become part of the finished products.

Therefore, Riverdi display modules are not CE marked.

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