TFT MODULE SPECIFICATION

# RVT35HITNWN00 V1.0A

HB, IPS 3.5” LCD TFT display datasheet
Rev. 1.2
2026-10-23

**Riverdi Sp. z o.o.**

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| ITEM | CONTENTS | UNIT |
|---|---|---|
| LCD Type | TFT/Transmissive/Normally Black/IPS | / |
| Size | 3.5 | Inch |
| Viewing Direction | Free | / |
| Outside Dimensions (W x H x D) | 54.46 x 82.94 x 3.63 | mm |
| Active Area (W x H) | 48.96 x 73.44 | mm |
| Pixel Pitch (W x H) | 0.153 x 0.153 | mm |
| Resolution | 320 (RGB) x 480 | / |
| Brightness | 1400 | cd/m² |
| LCD Interface Type | RGB/SPI | / |
| LCD IC | ILI9488 | / |
| Color Depth | 262K | / |
| Pixel Arrangement | RGB Vertical Stripe | / |
| With/Without Touch | Without Touch Panel | / |
| Weight | 32 | g |

**Note 1.** RoHS3 compliant

**Note 2.** LCM weight tolerance: ± 5%.

# 1. REVISION RECORD

| REV NO. | REV DATE | CONTENTS | REMARKS |
|---|---|---|---|
| 1.0 | 2024-11-19 | Initial Release | |
| 1.1 | 2026-07-20 | Added LCD IC information | |
| 1.2 | 2026-10-23 | Corrected timing table and added module revision. Corrected electrical parameters description. | |

# 2. CONTENTS

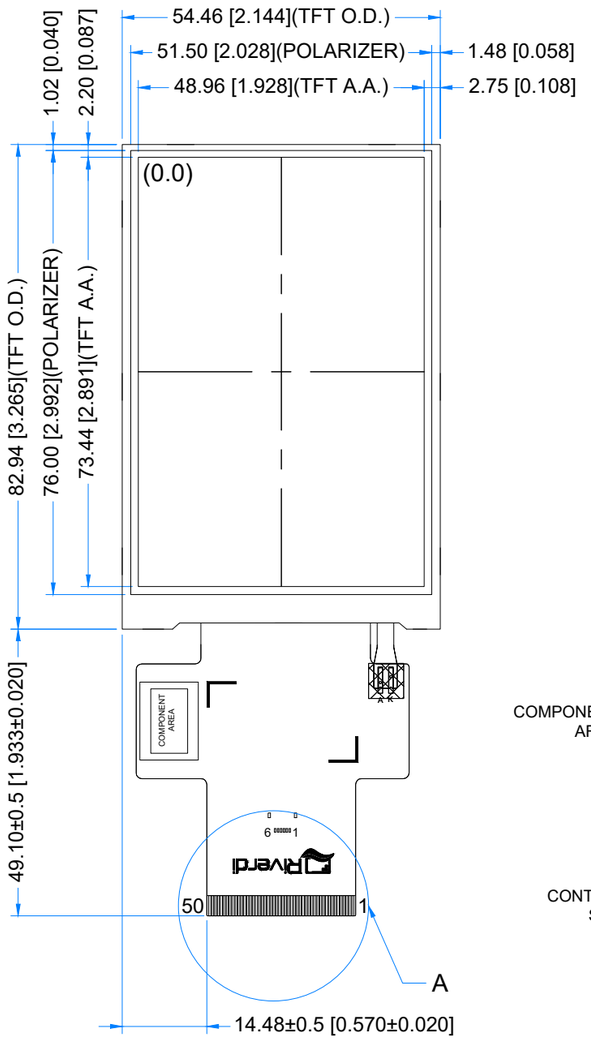
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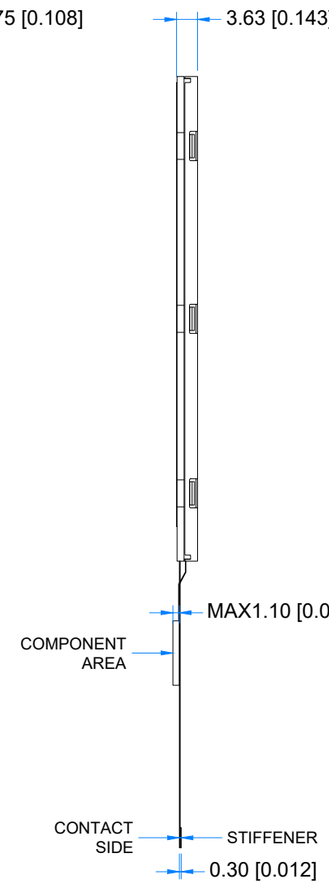
# 3. MODULE CLASSIFICATION INFORMATION

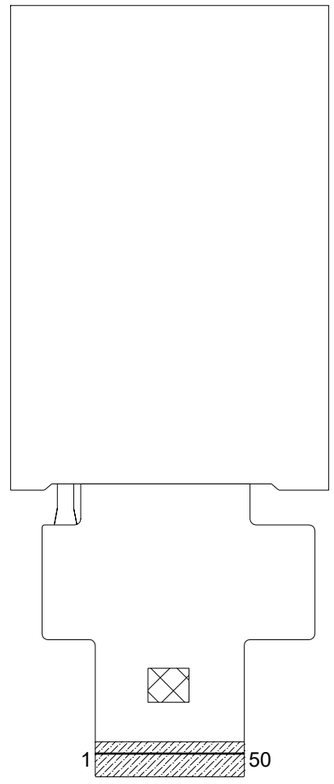
| RV | T | 35 | H | I | T | N | W | N | 00 | V1.0A |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |

| NO. | PARAMETER | SYMBOL |
|---|---|---|
| 1. | BRAND | RV – Riverdi |
| 2. | PRODUCT TYPE | T – TFT Standard |
| 3. | DISPLAY SIZE | 35 – 3.5” |
| 4. | MODEL SERIAL NO. | H – High Brightness, IPS |
| 5. | RESOLUTION | I – 320 x 480 px |
| 6. | INTERFACE | T – RGB/SPI |
| 7. | FRAME | N – Without Mounting Metal Frame |
| 8. | BACKLIGHT TYPE | W – LED White |
| 9. | TOUCH PANEL | N – Without Touch Panel |
| 10. | VERSION | 00 – (00-99) |
| 11. | MODULE REVISION | V1.0A |

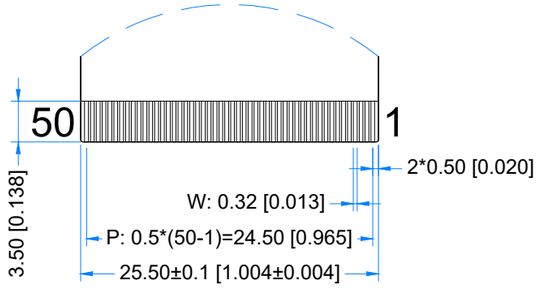
| Revision: | Changes: | Date: |
|---|---|---|
| 1.0 | Initial Case | 2024.09.03 |
| 1.1 | Drawing updated to actual standard | 2026.11.03 |

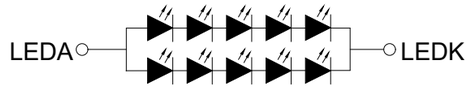



DETAIL A
SCALE 2:1




BACKLIGHT CIRCUIT DIAGRAM

**TFT NOTES:**
1. DISPLAY TYPE: TFT, TRANSMISSIVE, NORMALLY BLACK
2. RESOLUTION: 320*480
3. VIEWING ANGLE: FREE
4. DRIVER IC: ILI9488
5. SURFACE LUMINANCE: 1400cd/$m^2$
6. BACKLIGHT: 10LEDS, $V_f$=14-16v, $I_f$=100mA

**GENERAL NOTES:**
1. OPERATING TEMPERATURE: -20°C ~ 70°C
2. STORAGE TEMPERATURE: -30°C ~ 80°C
3. WITHOUT INDIVIDUAL TOLERANCE: ±0.2mm
4. RoHS COMPLIANT

PN: RVT35HITNWN00 V1.0A

SN:

| | | | | |
|---|---|---|---|---|
| DRAWN: | M.Stabinski | 2026.11.03 | 1:1.05 | |
| CHECKED: | M.Wierzbowski | 2026.11.03 | [mm] | |
| APPR: | M.Wierzbowski | 2026.11.03 | ISO A3 | P. 1 of 1 |

# 5. ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | MIN | MAX | UNIT |
|---|---|---|---|---|
| Supply Voltage for Module | $V_{CI}$ | -0.3 | 3.3 | V |
| Input Voltage | $V_{IN}$ | -0.3 | $V_{CI}$+0.3 | V |

**Note 1.** The above are maximum values. If exceeded, they may cause permanent damage to the unit.
**Note 2.** $VCC_{IO}$ is connected to $V_{CI}$.

# 6. ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Supply voltage | $V_{CI}$ | 2.5 | 2.8 | 3.3 | V |
| Input High Voltage for LCD | $V_{IH}$ | 0.7*$V_{CI}$ | - | $V_{CI}$ | V |
| Input Low Voltage for LCD | $V_{IL}$ | GND | - | 0.3*$V_{CI}$ | V |
| Output High Voltage for LCD | $V_{OH}$ | 0.8*$V_{CI}$ | - | $V_{CI}$ | V |
| Output Low Voltage for LCD | $V_{OL}$ | GND | - | 0.3*$V_{CI}$ | V |

# 7. BACKLIGHT ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT | NOTE |
|---|---|---|---|---|---|---|
| Backlight Driving Voltage | $V_F$ | 13.5 | 14.0 | 17.0 | V | Notes 1, 2 |
| Backlight Driving Current | $I_F$ | - | 100 | - | mA | |
| Backlight Power Consumption | $W_{BL}$ | - | 1.4 | - | W | |
| Backlight Lifetime | - | 30000 | 40000 | - | hours | Note 3 |

**Note 1.** Unless specified, the ambient temperature $T_a$ = 25°C

**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.

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# 8. ELECTRO-OPTICAL CHARACTERISTICS

| ITEM | SYMBOL | CONDITION | MIN | TYP | MAX | UNIT | RMK | NOTE |
|---|---|---|---|---|---|---|---|---|
| Response Time | Tr+Tf | θ=0° ø=0° Ta=25 °C | - | 30 | - | ms | FIG 1. | 4, 7 |
| Contrast Ratio | Cr | | | 700 | - | --- | FIG 2. | 1, 7 |
| Surface Luminance | Lv | | - | 1400 | - | cd/m2 | | 2, 7 |
| Viewing Angle Range | θ | ø = 90° | - | 80 | - | deg | FIG 3. | 6 |
| | | ø = 270° | - | 80 | - | deg | | |
| | | ø = 0° | - | 80 | - | deg | | |
| | | ø = 180° | - | 80 | - | deg | | |
| CIE (x, y) Chromaticity | Rx | θ=0° ø=0° Ta=25 °C | 0.621 | 0.651 | 0.681 | - | FIG 2. | 5,7 |
| | Ry | | 0.301 | 0.331 | 0.361 | - | | |
| | Gx | | 0.295 | 0.325 | 0.355 | - | | |
| | Gy | | 0.575 | 0.605 | 0.635 | - | | |
| | Bx | | 0.102 | 0.132 | 0.162 | - | | |
| | By | | 0.033 | 0.063 | 0.093 | - | | |
| | Wx | | 0.281 | 0.311 | 0.341 | - | | |
| | Wy | | 0.325 | 0.355 | 0.385 | - | | |

**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 $\delta$ 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.

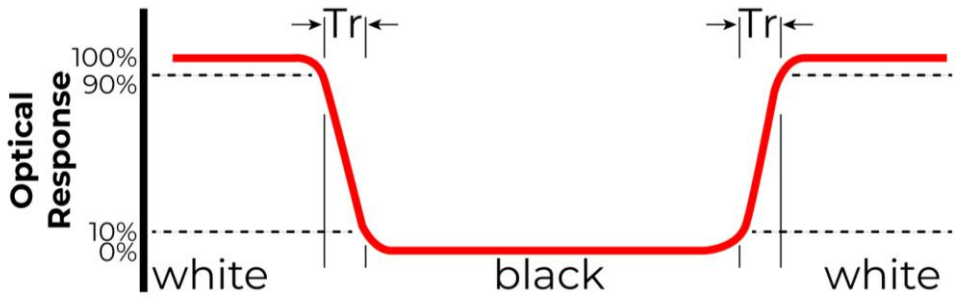
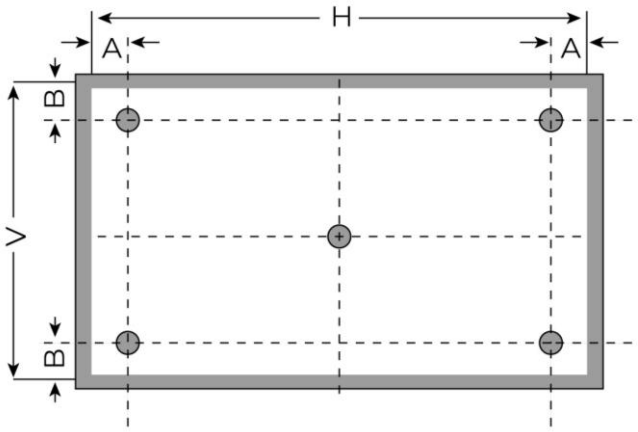



*Figure 1. The definition of response time*




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

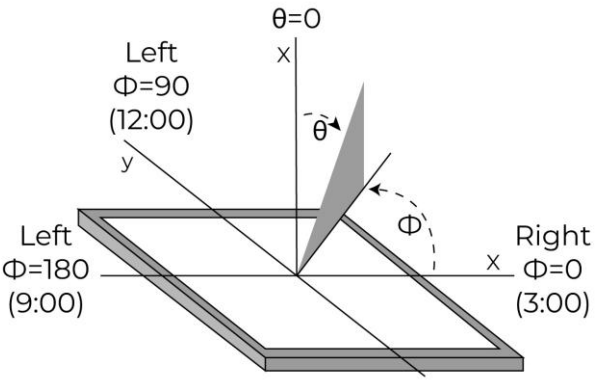



*Figure 3. The definition of viewing angle*

# 9. INTERFACES DESCRIPTION

## 9.1 TFT assignment

| PIN | SYMBOL | I/O | DESCRIPTION | NOTE |
|---|---|---|---|---|
| 1 | GND | P | Ground | |
| 2 | $V_{CI}$ | P | System Voltage | |
| 3 | $I_{M0}$ | - | The interface mode select (Note 2) | |
| 4 | $I_{M1}$ | - | The interface mode select (Note 2) | |
| 5 | $I_{M2}$ | - | The interface mode select (Note 2) | |
| 6 | RESET | I | Reset signal | |
| 7 | VSYNC | I | Vertical synchronizing signal | |
| 8 | HSYNC | I | Horizontal synchronizing signal | |
| 9 | PCLK | I | Dot clock signal | |
| 10 | DE | I | Data enable signal | |
| 11-34 | DB23~DB0 | I | Data bus | |
| 35 | TE | I | Tear effect signal | |
| 36 | SDO | O | Serial data output | |
| 37 | SDA | I | Serial data input signal | |
| 38 | RD | I | Read signal | |
| 39 | WR/SCL | I | DBI Type B: WRX pin, serves as write signal<br>DBI Type C: SCL pin as Serial Clock when operates in the serial interface | |
| 40 | DCX | I | Data/Command Selection pin;<br>Low: Command;<br>High: Parameter | |
| 41 | CS | I | CS signal | |

| | | | | |
|---|---|---|---|---|
| **42** | GND | P | Ground | |
| **43** | TP_RESET | I | TP Reset Signal | |
| **44** | TP_INT | O | IIC Interrupt signal | |
| **45** | TP_SDA | O | IIC Data | |
| **46** | TP_SCL | I | IIC Clock signal | |
| **47** | TP_VDD | P | CTP System Voltage | |
| **48** | GND | P | Ground | |
| **49** | LEDA | P | LED+ | |
| **50** | LEDK | P | LED- | |

**Note 1.** I: Input, O: Output, P: Power

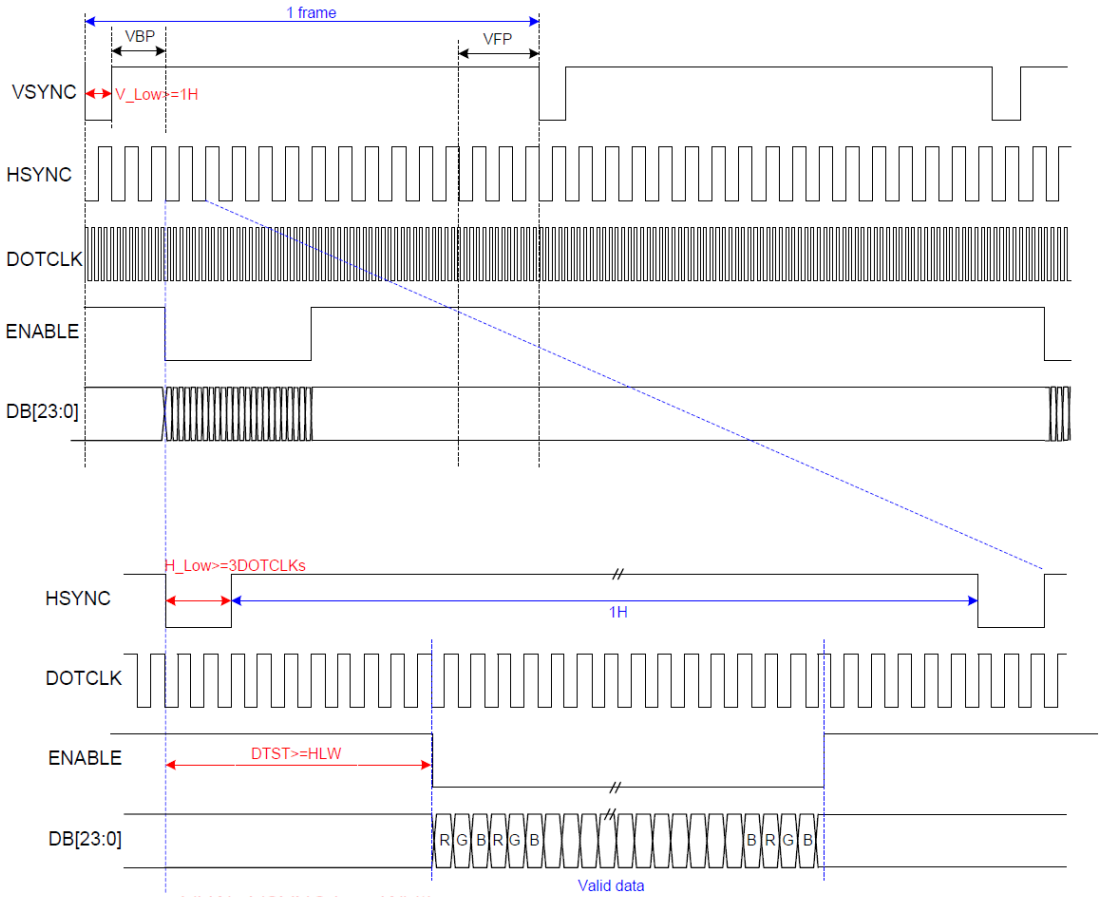
**Note 2.** Interface mode select

| IM2 | IM1 | IM0 | INTERFACE |
|---|---|---|---|
| 0 | 0 | 0 | MCU18 |
| 0 | 0 | 1 | MCU9 |
| 0 | 1 | 0 | MCU16 |
| 0 | 1 | 1 | MCU8 |
| 1 | 0 | 1 | 3-line SPI |
| 1 | 1 | 1 | 4-line SPI |

# 10. TIMING CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| **Horizontal synchronization** | HSW | 3 | 10 | - | DOTCLK |
| **Horizontal back porch** | HBP | 3 | 20 | - | DOTLCK |
| **Horizontal address** | HACT | - | 320 | - | DOTCLK |
| **Horizontal front porch** | HFP | 3 | 40 | - | DOTCLK |
| **Horizontal frequency** | fH | - | 30.8 | 33 | kHz |
| **Vertical synchronization** | VSW | 1 | 2 | - | Line |
| **Vertical back porch** | VBP | 2 | 8 | - | Line |
| **Vertical address** | VACT | - | 480 | - | Line |
| **Vertical front porch** | VFP | 2 | 18 | - | Line |
| **Vertical frequency** | fV | 60 | 60.6 | 70 | Hz |
| **DOTCLK cycle** | tDCLK | 50 | 83.3 | 100 | ns |
| **DOTCLK frequency** | fDCLK | 10 | 12 | 20 | MHz |

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VLW : VSYNC Low Width
HLW : HSYNC Low Width
DTST : Data Transfer Startup Time

# 11. INSPECTION

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

# 12. RELIABILITY TEST

| NO. | TEST ITEM | TEST CONDITION | NOTE |
|---|---|---|---|
| 1 | High Temperature Storage | 80°C/96 hours | Note 1 |
| 2 | Low Temperature Storage | -30°C/96 hours | |
| 3 | High Temperature Operating | 70°C/96 hours | |
| 4 | Low Temperature Operating | -20°C/96 hours | |
| 5 | High Temperature and High Humidity | Humidity 40℃, 90%RH, 96Hrs | |
| 6 | Electro static discharge | Contact = ±4kV; Air = ±8kV, | Note 2 |
| 7 | Thermal Cycling Test (No operation) | -20℃ for 30min, 25℃ for 5 min 70℃ for 30 min. 25℃ for min (1 cycle)<br>5 cycles. | |
| 8 | Vibration Test | 10Hz~50Hz Swing: 0.75mm time: 30 min | |
| 9 | Package Drop Test | Height: 60 cm<br>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

# 13. 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.

This is not a standalone product. It was designed as an electronic component. It needs integration with a whole system to be fully functional.

Riverdi grants the guarantee for the proper operation of the goods for a period of 12 months from the date of possession of the goods. If in a consequence of this guaranteed execution the customer has received the defects-free item as replacement for the defective item, the effectiveness period of this guarantee shall start anew from the moment the customer receives the defects-free item.

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**contact@riverdi.com**

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