

| | | | |
|----------------------|------------------|--------------------|------------------|
| MVT-E070000 | 800 x 480 | SPI/QSPI Interface | Aurum TFT Series |
| Specification | | | |
| Version: 1 | Date: 10/12/2025 | | |
| Revision | | | |
| 1 | 10/12/2025 | First issue | Created By |
| | | | WE |
| | | | Checked By |
| | | | AB |
| | | | Box Quantity |
| | | | Weight / Display |
| | | | --- |
| | | | --- |

| Display Features | |
|-----------------------|---------------------------|
| Display Size | 7.00" |
| Resolution | 800 x 480 |
| Orientation | Landscape |
| Appearance | RGB |
| Supply Voltage | 5-12V |
| Interface | SPI/QSPI |
| Brightness | 1200 cd/m ² |
| Touchscreen | --- |
| Module Size | 164.90 x 100.00 x 18.30mm |
| Operating Temperature | -20°C ~ +70°C |
| Pinout | N/A |
| Pitch | N/A |



| Also Available | |
|------------------|---|
| Part Number | Description |
| MVT-R070000(LCR) | 7.0" RGB TFT, optional Lugs(L), CTP(C), RTP(R) |
| MVT-H070000(LCR) | 7.0" HDMI TFT, optional Lugs(L), CTP(C), RTP(R) |
| MVT-E070000(LCR) | 7.0" Embedded TFT, optional Lugs(L), CTP(C), RTP(R) |

| Display Accessories | |
|---------------------|-------------|
| Part Number | Description |
| | |





The Midas Embedded displays integrate a high-brightness TFT panel with a dedicated graphics controller, providing a ready-to-use display solution for embedded, industrial, and commercial applications. Designed for ease of integration, the module accepts a single 5–12 V supply and directly converts SPI and QSPI signals into full graphics.

The module is available in 4.3-inch to 10.1-inch panel sizes with brightness options up to 1250 nits, ensuring readability in outdoor and high-ambient-light environments. The touch is integrated into the graphics driver, allowing these to be read on the serial interface.

DESIGN • MANUFACTURE • SUPPLY

This solution eliminates the need for costly embedded designs, allowing highly detailed interfaces to be created from cost-efficient micro-controllers. This also allows legacy applications to upgrade without needing a full design change.



General Data

Complete Module

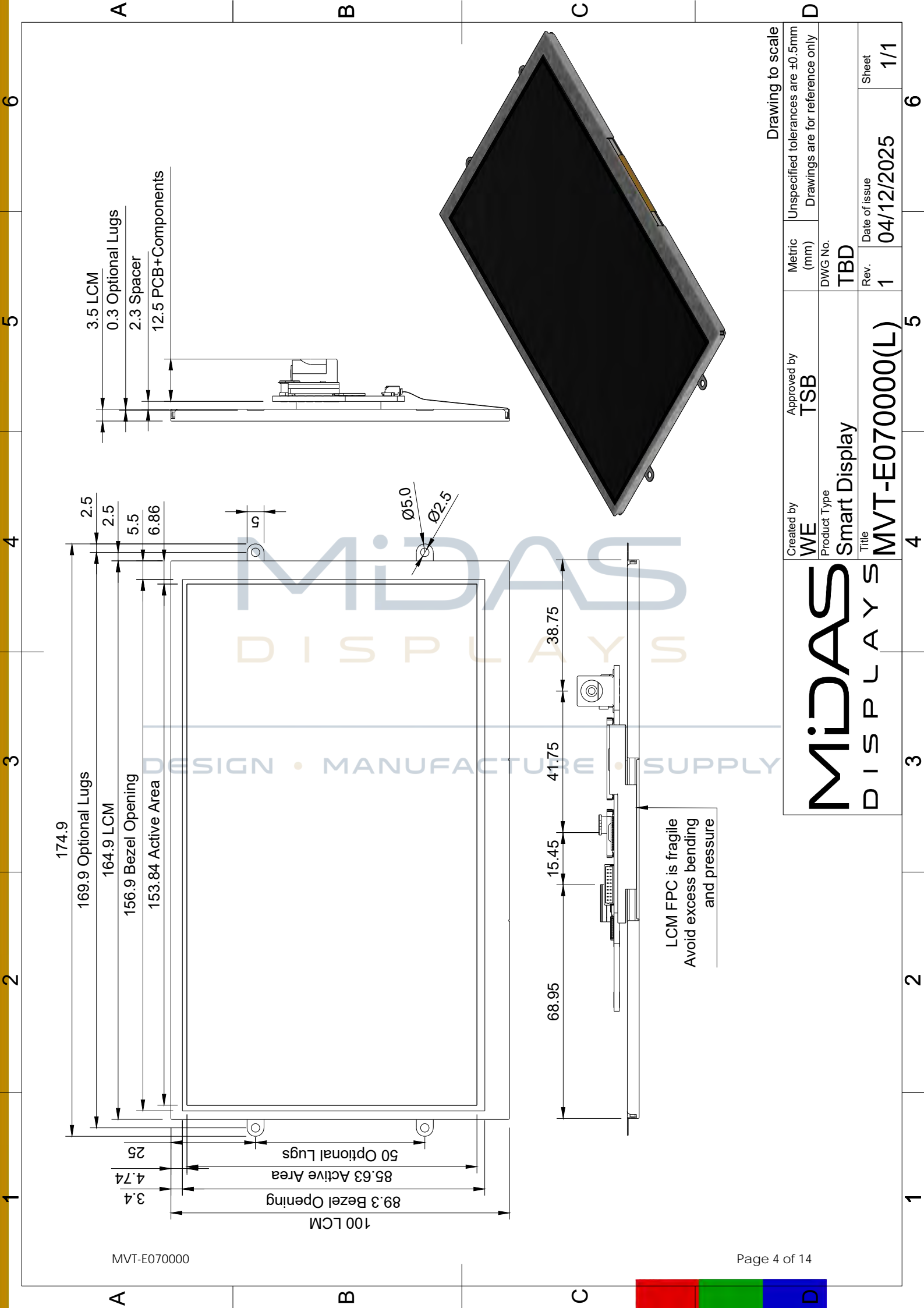
| Feature | Value |
|--------------------------------|-------------------------------------|
| Size (inch) | 7.00 |
| Resolution (pixels) | 800(Horizontal) x 480(Vertical) |
| Type | TFT/IPS/NORMALLY BLACK/TRANSMISSIVE |
| Product Size (mm) | 164.90 x 100.00 x 18.30 |
| Active Area (mm) | 153.84 x 85.632 |
| Interface | SPI/QSPI |
| Connector type | Seeed XIAO Module/10W 1.0mm |
| Colour Depth | 16.7 M |
| Pixel pitch (mm) | 0.1923 x 0.1784 |
| Luminance (cd/m ²) | 1200 |
| Viewing Direction (O'clock) | All |

Aurum TFT Part Number Definition Example

| MVT- | E | 0700 | 00 | L | C |
|------|---|------|----|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

- 1 MVT: Midas Versatile TFT
- 2 Interface: R = RGB L = LVDS H = HDMI E = Embedded
- 3 Size: 4.3" = 0430 5.0" = 0500 7.0" = 0700 10.1" = 1010
- 4 Series: 00, 01, 02 etc
-
- 5 Lugs: Blank = No Mounting Lugs L = Mounting Lugs
- 6 Touch: Blank = No Touch C = CTP R = RTP





MVT-E070000

Drawing to scale

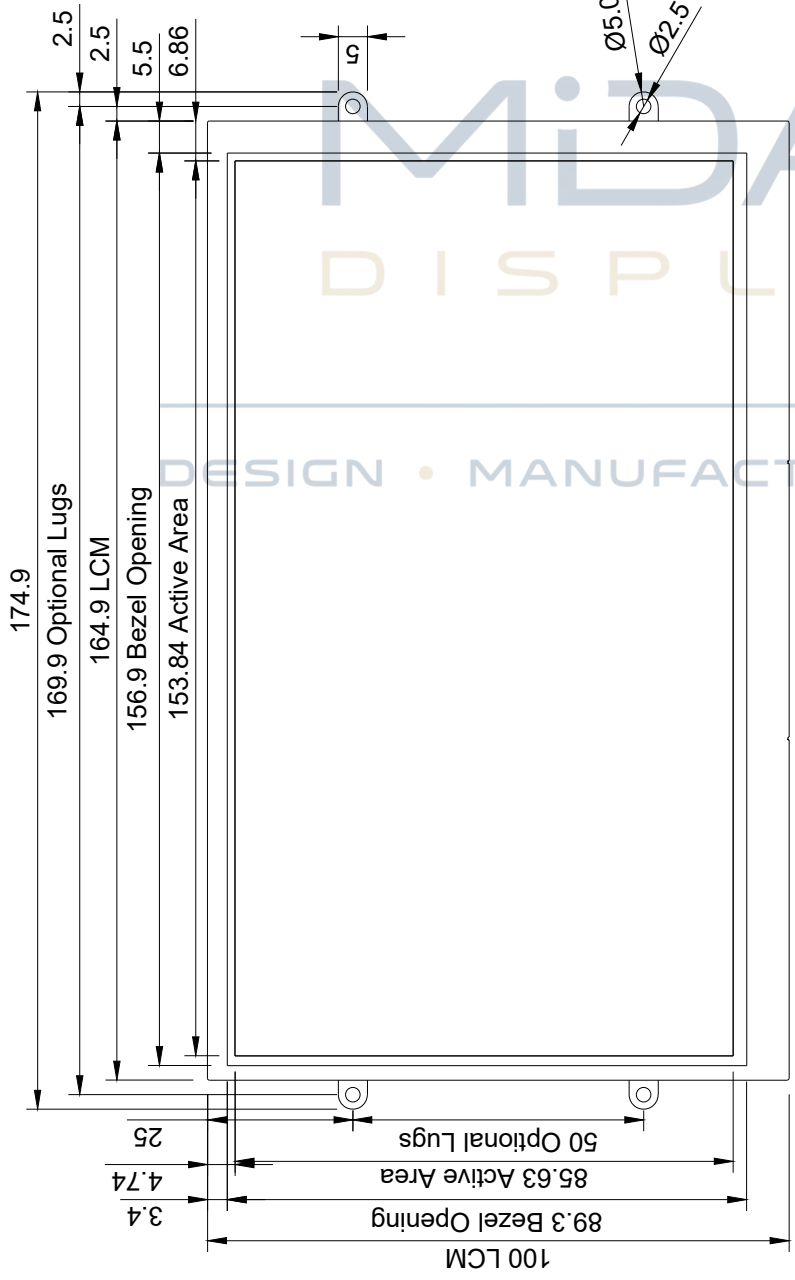
| | | | |
|--------------------------------------|---------------------------|-------------|--|
| Created by WE | Approved by TSB | Metric (mm) | Unspecified tolerances are ±0.5mm Drawings are for reference only |
| Product Type Smart Display | DWG No. TBD | Rev. | Date of issue |
| Title MVT-E070000(L) | 1 | 1 | 04/12/2025 |
| | | | Sheet |
| | | | 1/1 |

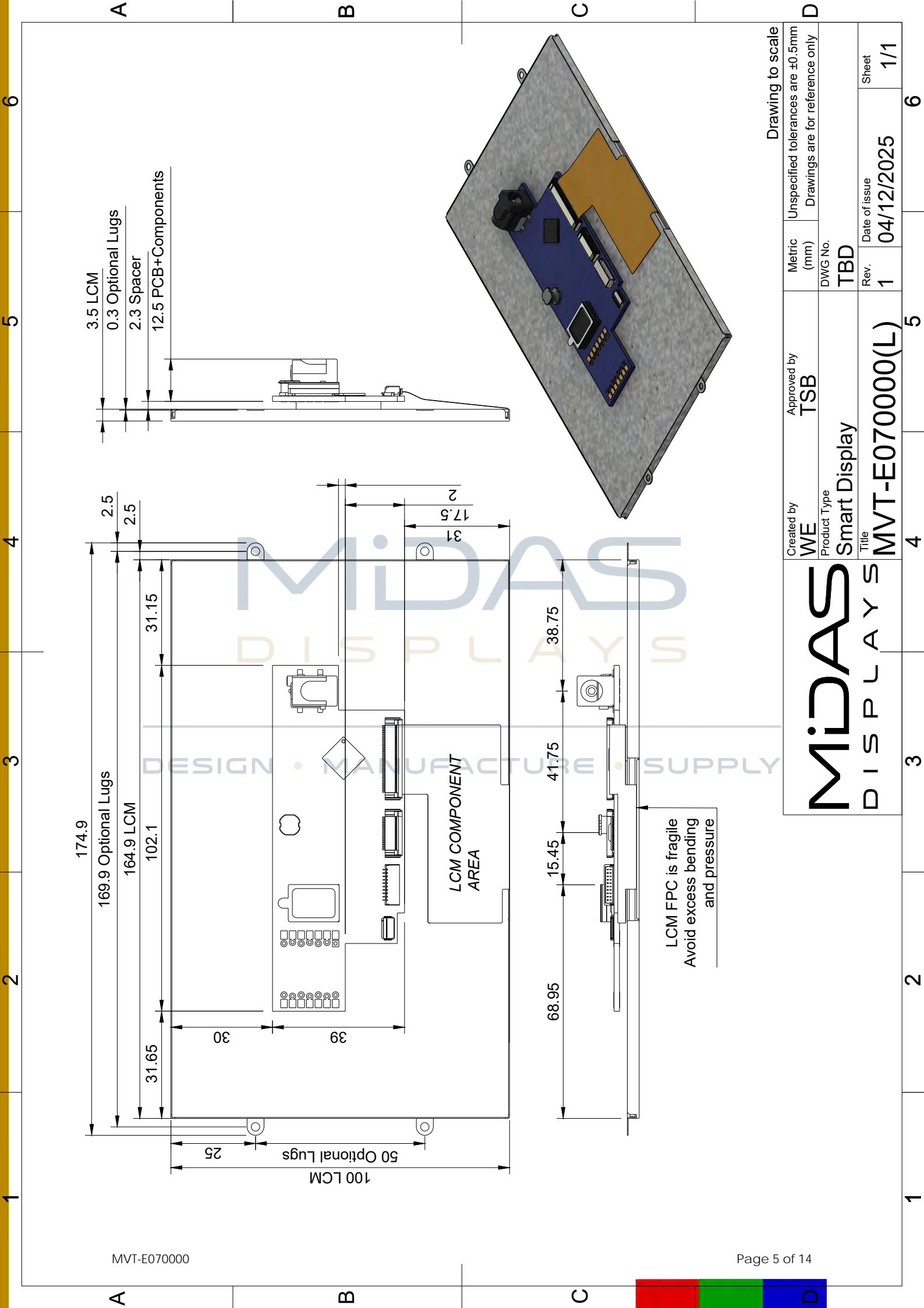
MIDAS
DISPLAYS

DESIGN • MANUFACTURE • SUPPLY

LCM FPC is fragile
Avoid excess bending
and pressure

- 3.5 LCM
- 0.3 Optional Lugs
- 2.3 Spacer
- 12.5 PCB+Components



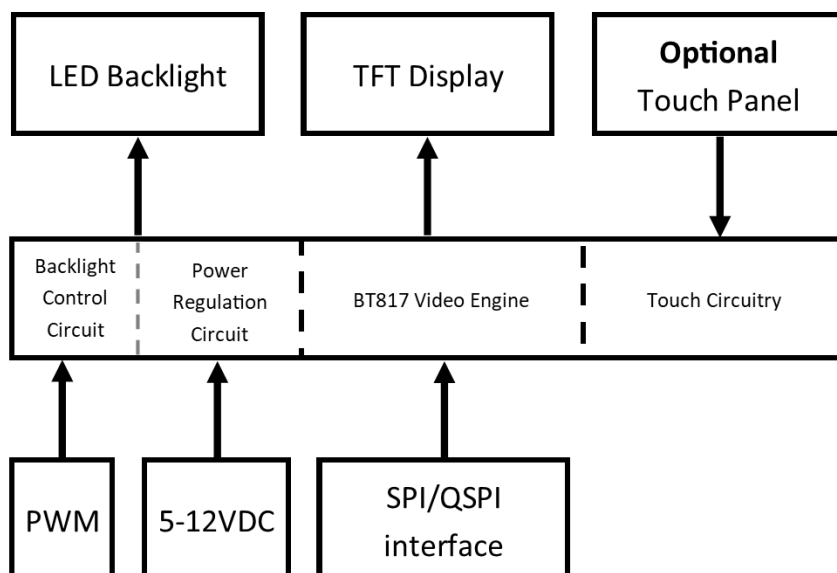


| | | | |
|--------------------------------------|---------------------------|---|---------------------------------|
| Created by WE | Approved by TSB | Metric (mm) | Drawing to scale |
| Product Type Smart Display | DWG No. TBD | Unspecified tolerances are $\pm 0.5\text{mm}$ | Drawings are for reference only |
| Title MVT-E070000(L) | Rev. 1 | Date of issue 04/12/2025 | Sheet 1/1 |

MIDAS
DISPLAYS

LCM FPC is fragile
Avoid excess bending
and pressure

Block Diagram



Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|-----------------------|--------|------|-------|------|
| Power Supply Voltage | VDD | +4.7 | +14.5 | V |
| Operating temperature | Top | -20 | +70 | °C |
| Storage temperature | Tst | -30 | +80 | °C |

Electrical Characteristics

Operating Conditions

| Item | Symbol | Min | Typ. | Max | Unit |
|---|--------|------|------|-----|------|
| Power Supply | VDD | 4.75 | - | 12 | V |
| Logic voltage | Vil | 3 | 3.3 | 3.6 | V |
| Supply Current <i>Checkerboard 100% Brightness</i> | IL | - | TBA | - | mA |

Backlight Conditions

| Item | Symbol | Min | Typ. | Max | Unit |
|-----------------------|------------|------|------|-----|------|
| PWM Backlight Control | Logic High | - | 5 | 5.5 | V |
| | Logic Low | -0.3 | 0 | - | V |
| PWM Control Freq. | - | - | 1000 | - | Hz |

Pin Assignment

XIAO Module – Optional Seed XIAO ESP32-C3/RP2040 Board

| Pin No. | Symbol | Description |
|---------|--------|---------------------------------------|
| 1 | /PWDN | Power control for E-Fuse (Active Low) |
| 2 | /INT | BT817Q Interrupt Output (Active Low) |
| 3 | /PD | BT817Q Power down (Active Low) |
| 4 | /CS | BT817Q Chip select (Active Low) |
| 5 | SDA | Optional I2C Data |
| 6 | SCL | Optional I2C Clock |
| 7 | TX | Optional UART TX |
| 8 | RX | Optional UART RX |
| 9 | SCK | BT817Q SPI Serial Clock |
| 10 | MISO | BT817Q SPI MISO |
| 11 | MOSI | BT817Q SPI MOSI |
| 12 | NC | Not Connected (Isolated pad) |
| 13 | GND | Ground |
| 14 | USB 5V | 5V Supply from XIAO board USB input |

CN3 – Barrel Jack

| Pin No. | Symbol | Description | Note |
|---------|--------|-------------|---|
| 1 | GND | Ground |  |
| 2 | GND | Ground | |
| 3 | VIN | 5-12V Input | |
| 4 | VIN | 5-12V Input | |

CN4 – Pin Header

| Pin No. | Symbol | Description |
|---------|--------|------------------------------|
| 1 | VIN | 5-12V Input |
| 2 | PWM | External backlight PWM input |
| 3 | GND | Ground |

CN5 – JST SM10B-SRSS-TB-(LF)(SN) (mating part SHR-10V-S-B)

| Pin No. | Symbol | Description |
|---------|--------|--------------------------------------|
| 1 | GND | Ground |
| 2 | GND | Ground |
| 3 | /INT | BT817Q Interrupt output (Active Low) |
| 4 | /PD | BT817Q Power down (Active low) |
| 5 | IO3 | QSPI D3 |
| 6 | IO2 | QSPI D2 |
| 7 | MISO | SPI MISO |
| 8 | MOSI | SPI MOSI |
| 9 | /CS | BT817Q Chip select (Active low) |
| 10 | SCK | SPI Clock |



CN6 – 20 pin 0.5mm pitch FCC (Bottom Contact)

| Pin No. | Symbol | Description |
|---------|---------|--------------------------------------|
| 1 | SCK | SPI Clock |
| 2 | /CS | BT817Q Chip select (Active low) |
| 3 | MOSI | SPI MOSI |
| 4 | MISO | SPI MISO |
| 5 | IO2 | QSPI D2 |
| 6 | IO3 | QSPI D3 |
| 7 | /PD | BT817Q Power down (Active low) |
| 8 | /INT | BT817Q Interrupt output (Active low) |
| 9 | GND | Ground |
| 10 | PW-DN | Board power down (Active low) |
| 11 | RX/SCL | Seeed XIAO RX (UART) or SCL (I2C) |
| 12 | TX/SDA | Seeed XIAO TX (UART) or SDA (I2C) |
| 13 | AUD-LN | Audio Line Out |
| 14 | SP- | Speaker Negative |
| 15 | SP+ | Speaker Positive |
| 16 | GND | Ground |
| 17 | RAW VIN | 5-12V input |
| 18 | RAW VIN | 5-12V input |
| 19 | RAW GND | Ground input |
| 20 | RAW GND | Ground input |

Solder Links

| Link | Description |
|-----------------------------------|--|
| 60 | 4.3" Backlight Selection – Other backlight links must NOT be soldered |
| 80 | 5.0" Backlight Selection – Other backlight links must NOT be soldered |
| 120 | 7.0" Backlight Selection – Other backlight links must NOT be soldered |
| 5VIN=VUSB | Power Seeed XIAO from board 5V regulator* |
| LK1 | Link to common VIN with 5V regulator output* |
| LK8 | Common the USB 5V with VIN to power product through USB input |
| UPDN | Scan from Top to Bottom |
| LR | Scan from Right to Left |
| XR | Internal use only |
| YD | Internal use only |
| XL | Internal use only |
| YU | Internal use only |
| SEL6 | Internal use only |
| *Must not be linked when VIN > 5V | |



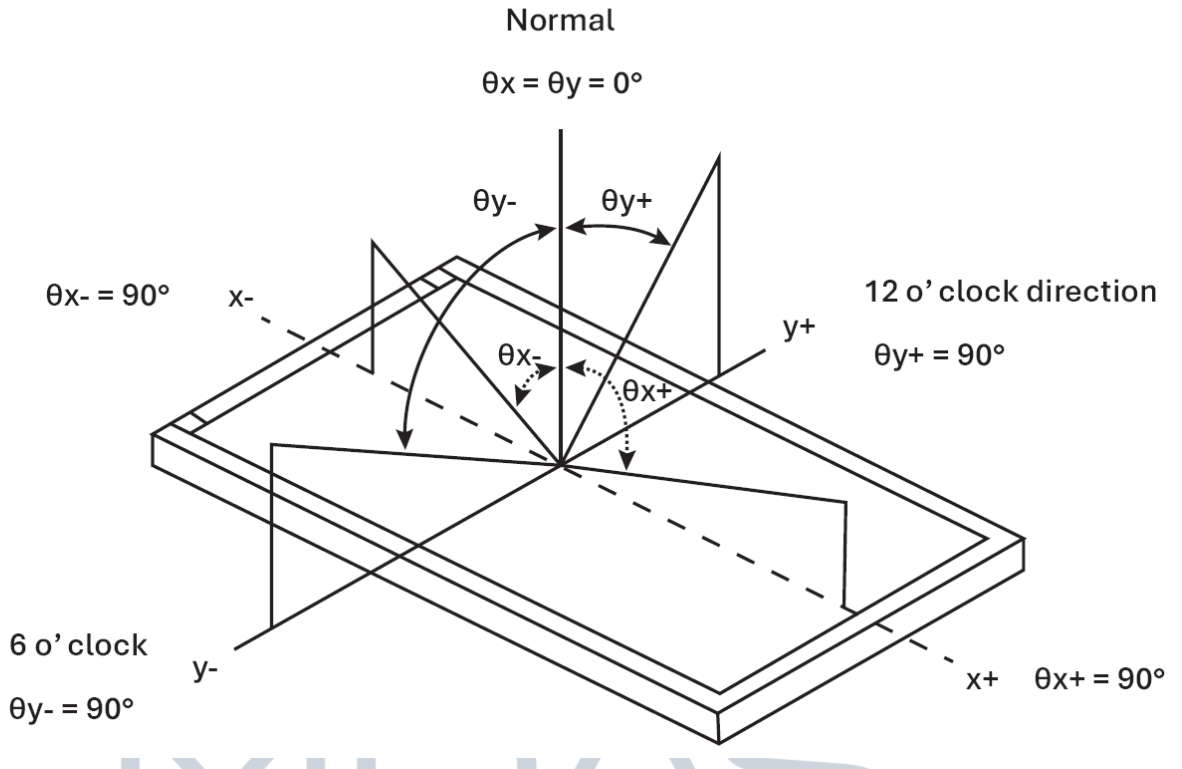
Optical Characteristics

| Item | | Symbol | Conditions | Specifications | | | Unit |
|-------------------------|---------|---------------|----------------------|----------------|-------|---------|-------------------|
| | | | | Min | Typ. | Max | |
| Luminance (Without CTP) | | L | | - | 1200 | - | cd/m ² |
| Contrast ratio | | CR | $\theta=0^\circ$ | 800 | 1000 | - | |
| Response time | Rising | Tr | 25°C | - | 25 | - | ms |
| | Falling | Tf | | | | | |
| CIE Colour Coordinate | RED | XR | Normal Viewing Angle | +/-0.02 | 0.611 | +/-0.02 | |
| | | YR | | | 0.335 | | |
| | GREEN | XG | | | 0.300 | | |
| | | YG | | | 0.549 | | |
| | BLUE | XB | | | 0.144 | | |
| | | YB | | | 0.176 | | |
| | WHITE | XW | | | 0.306 | | |
| | | YW | | | 0.344 | | |
| Viewing Angle | Hor. | θ_{x+} | CR \geq 10 | - | 85 | - | Degree |
| | | θ_{x-} | | - | 85 | - | |
| | Ver. | θ_{y+} | | - | 85 | - | |
| | | θ_{y-} | | - | 85 | - | |

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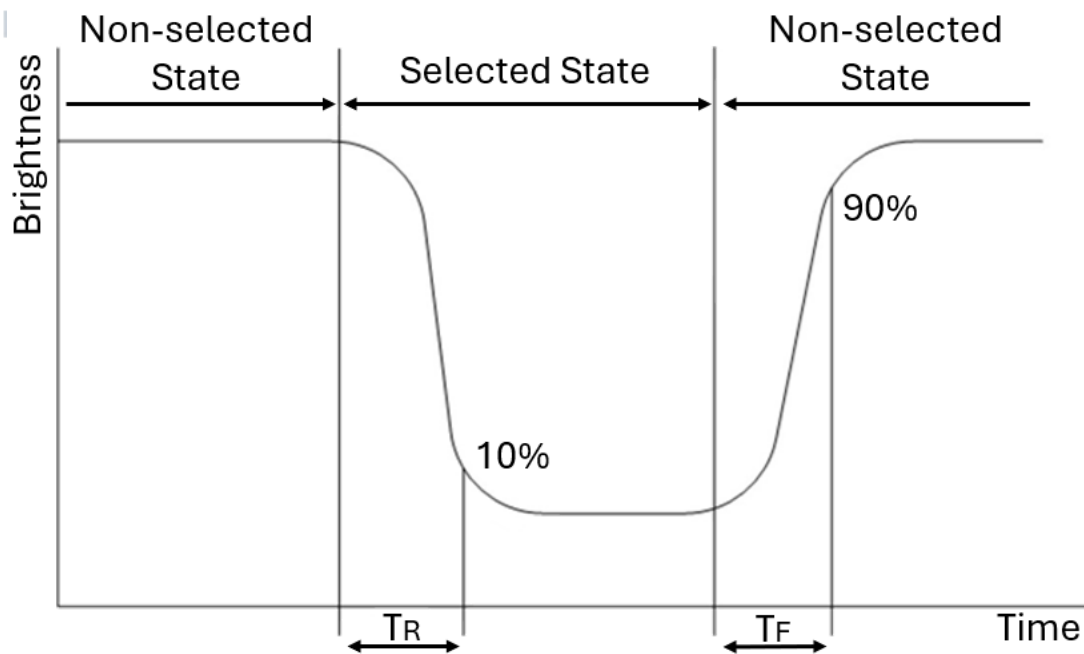
Definition of viewing angle θ_x and θ_y :



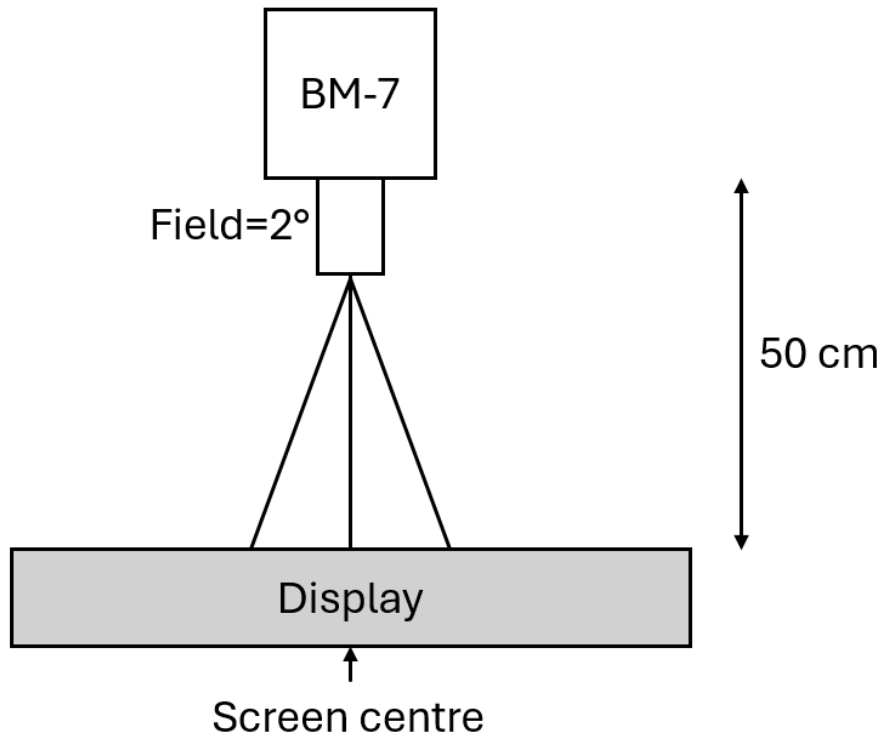
Definition of contrast ratio:

$$CR = \frac{\text{Brightness of non-selected dots (white)}}{\text{Brightness of selected dots (black)}}$$

Definition of response time:

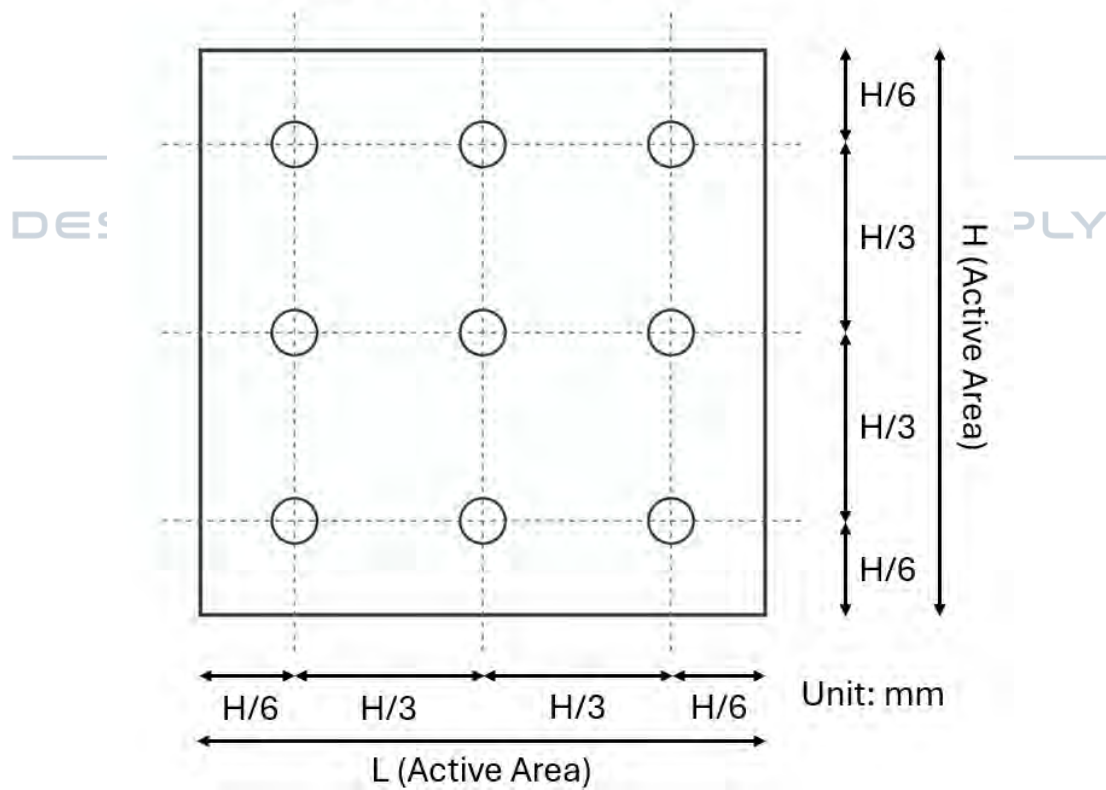


Brightness Test Equipment Setup



Field = 2° (As measuring "black" image, field = 2° is the best testing condition)

Brightness Test Point Setup



Reliability Test – PENDING

| Environmental Item | CONDITIONS | |
|--|---------------|--------------|
| High Temperature Storage | TA=80°C | 96H |
| Low Temperature Storage | TA=-30°C | 96H |
| High Temperature Operation | TA=70°C | 96H |
| Low Temperature Operation | TA=-20°C | 96H |
| High Temperature and High Humidity Operation | +60°C, 90%RH | 96H |
| Thermal Shock | -30°C → +80°C | 0.5H:5CYCLES |

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DISPLAYS

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Handling Precautions

- The display panel is constructed of glass. Refrain from exposing it to mechanical shock, such as dropping it from a height.
- The display should not be disassembled as this can impact the functionality and invalidate the warranty.
- In the event of damage to the display panel resulting in leakage of the liquid crystal substance, it is imperative not to ingest the substance. If contact occurs with skin or clothing, please wash the affected area thoroughly with soap and water immediately.
- Do not apply excessive force to the display surface or adjoining areas, as this may cause colour tone variations.
- The polariser covering the display surface of the LCD module is soft and easily scratched. Handle this polariser carefully.
- To prevent damage to the elements by static electricity, observe EMI precautions.
- Ensure that the body is grounded when handling the LCD module.
- Tools required for assembly, such as soldering irons, must be properly grounded.
- To reduce the generation of static electricity, avoid conducting assembly and other work under dry conditions.
- The LCD module is coated with a film to protect the display surface. Exercise caution when peeling off this protective film, as static electricity may be generated.
- Use only specific solvents, like Isopropyl or Ethyl alcohol, for cleaning the display. Clean with a soft, clean cloth and avoid submerging the display.
- The removal of the protective tape over components may result in damage or cause detachment from their solder pads.
- To minimise potential performance degradation of the LCD modules due to static electricity or other factors, please exercise caution when handling the modules. Avoid touching the following areas:
 - The exposed sections of the printed circuit board
 - The terminal electrode sections.

Assembly Precautions

- Do not make alterations or modifications to the display, including the glass, printed circuit board, components or FFC/FPC unless advised by Midas as this will invalidate the warranty.
- Solder should only be applied to the specified terminals. For direct solder displays, a hot bar should be used, with 250-300°C for 3-5 seconds.
- The mounting method should not add mechanical stress upon the display.
- Assembling operators should be grounded during the entire process of handling the display. Likewise, any tools, such as soldering irons, should be properly grounded.
- Avoid cleaning solutions from the assembly process, such as solder flux cleaning fluids, from getting onto the display as this can leak into the housing and cause internal damage.
- Assembly should be conducted under ESD safe conditions to reduce the risk of static electricity.
- Continuous high temperatures during assembly may cause deformation or damage.
- Care should be taken when bending the FFC/FPC, as continuous bends may wear out the circuitry.
- The plating of the FFC/FPC can be worn down by multiple insertions.
- Lead free solder should be used to adhere with RoHS



Operation Precautions

- The maximum ratings of the display should never be exceeded, or functionality cannot be guaranteed.
- Sudden shutdown caused by forced removal of the power supply may cause damage to the electronics of the display.
- Temperature and environment can influence the display and electronics, and the display should be tested by the end customer within expected working conditions to check for satisfactory performance.
- The user should implement external over-current and over-voltage protection.
- Do not apply signals to the logic input if the display is not powered
- A constant current source is recommended for the operation of the backlight. Using a constant voltage source without adequate current limitations can permanently damage the backlights operation.
- If the LCD modules have been operating for a long time showing the same display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. Abnormal operating status can be resumed to be normal condition by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.

Others

- Liquid crystals solidify at low temperature (below the storage temperature range) leading to defective orientation of liquid crystal or the generation of air bubbles (black or white). Air bubbles may also be generated if the module is subjected to a strong shock at a low temperature.
- When storing the LCD modules, avoid exposure to direct sunlight or light from fluorescent lamps. Keep the modules in bags designed to prevent static electricity charging under low temperature and normal humidity conditions (avoid high temperature, high humidity, and temperatures below 0°C). Whenever possible, store the LCD modules in the same packaging as when they were shipped from Midas.
- Midas maintains the right to change the passive components, and the PCB revision without informing the customer with the intent to continue supplying the product with the same or better performance.
- This display is supplied as a component for use within a completed assembly. As such it should be tested within the completed unit for suitability. Performance may vary depending on external components.
- This device will have susceptibility to external noise and interference; care should be taken to isolate or shield the product if necessary. Cables may require additional shielding or shortening.
- The disposal of a display should be handled by qualified industrial waste management and is not for standard waste disposal.
- Midas's warranty liability is strictly confined to the repair and replacement of purchased products. Midas shall not be held liable for any consequential damages.
- The warranty period for products sold from Midas Displays is 12 months from dispatch, unless otherwise stated. Terms and conditions apply.

