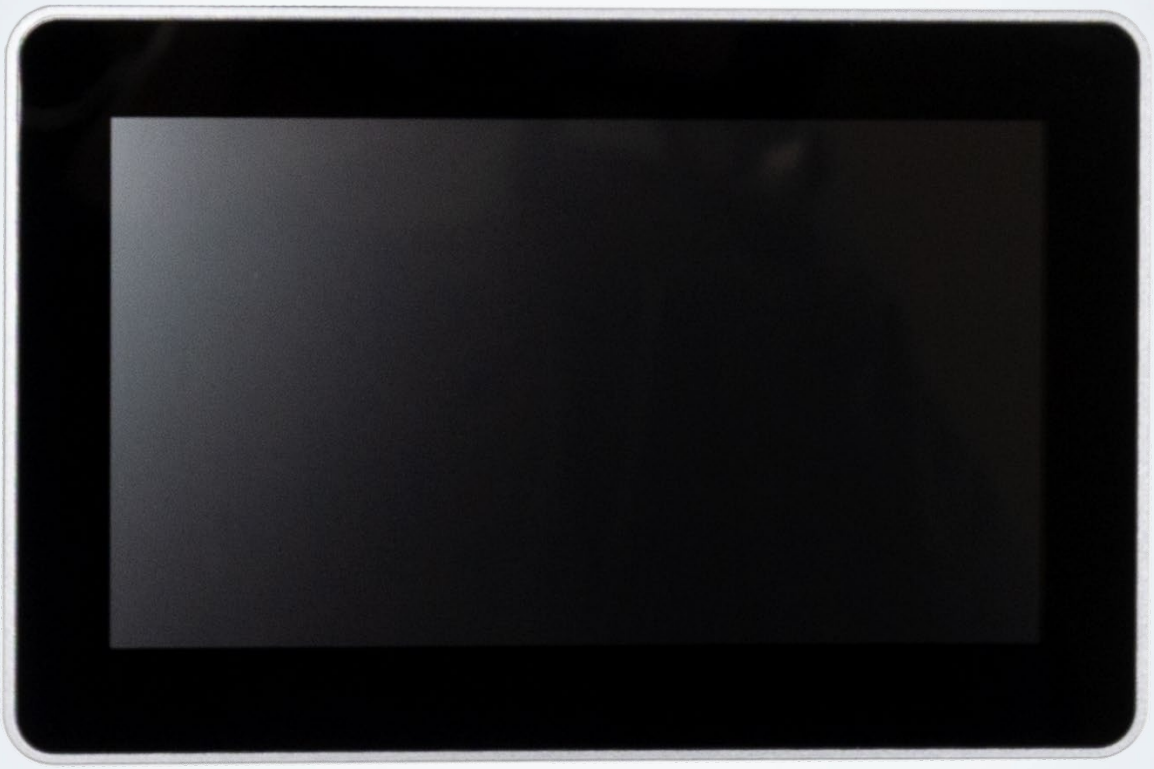
DSP2000 - OMI

HMI (Human Machine Interface)

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⚠ Important ⚠

To ensure proper usage, we ask you to read these operating instructions carefully before installing the HMI.

⚠ **NOTE:** The table below identifies the features compatible with your HMI firmware issue number.

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Firmware Issue	Notes
1.0.0	As per this OMI release
1.1.0	Custom screensaver image compatibility/Keyboard styling.

1.0 General notes

Before installation and start-up of the HMI, please read this OMI carefully to ensure correct use. This OMI applies only to the HMI and not for the complete system it is connected to. It is recommended to keep a copy of these operating instructions together with the device. It must be ensured that all persons that are to work on the device can refer to the operating instructions at any time.

1.1 Exclusion of liability

To allow for future developments, in fan technology and controller refinements, any technical data given here is subject to alteration. We do not accept any liability for possible errors or omissions in the information contained in the data, illustrations or drawings provided. We accept no liability for damage caused by misuse, incorrect use, improper use or because of unauthorised repairs or modifications.

1.2 Introduction

The DSP2000 is a device that is designed to be used with the Modbus Monitor & Control Unit (MMCU). The ‘Ethernet LAN’ port is used to connect to the ethernet port of the MMCU. The HMI provides an interface to the web server configuration page of the MMCU.

2.0 Safety notice

⚠ CAUTION – Power

The unit can be powered by DC power only, voltage range: 5V ± 10%, compatible only with power supply unit included in the box. The peak starting current can be as high as 2.4A.

⚠ CAUTION – Safety Instructions

The unit should be grounded to minimise the risk of electrostatic discharge damage to the screen. Grounding points are provided on the back panel. If the equipment is equipped with an antenna, please keep a distance of at least 20cm from the equipment during use. This product is only supported for indoor use.

3.0 Overview

3.1 Specification

Table 1 - HMI Specification

System	
CPU	Broadcom BCM2712 2.4GHz quad-core 64-bit Arm Cortex-A76
VPU	4K60fps HEVC decoder
GPU	OpenGL ES 3.1 & Vulkan 1.0
Memory	8GB LPDDR4X-4267 SDRAM

Software	
Operating System	Raspberry Pi OS (Desktop) 64-bit

Side I/O	
1000M Ethernet	1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network.
Power	1 x power in port, USB Type-C connector, supporting 5V/2.4A DC power input
USB 2.0	Disabled
USB 3.0	Disabled
HDMI	Disabled

LCD	
LCD Size	7.0” TFT
Resolution	1024 x 600

LCD	
Colours	16.7MB
Active Area	154.21mm (H) x 85.92mm (V)
Backlight	LED
MTBF	>30000h
Pixel Pitch	400cd/m^2
Contrast Ratio	800:1
Response Time	30ms
Viewing Angle	85° (L) / 85° (R) / 85° (U) / 85° (D)

Touch Screen	
Type	Multi-point Capacitive Touch Screen
Transmittance	≥85%
Connection method	16.7MB
Active Area	154.21mm (H) x 85.92mm (V)
Backlight	LED
MTBF	>30000h
Pixel Pitch	400cd/m^2

Electrical Characteristics	
Input Voltage	5V DC
Power Consumption	12W (Max)

Power Consumption	
Normal Operation	~5.5W
Power-saver mode	~2.2W

Environmental & Regulatory	
Operating Temperature	-20°C ~ 60°C
Storage Temperature	-20°C ~ 60°C
Ingress protection	IP65 compliant display side, when panel mounted
Ambient humidity	5% ~ 95% (non-condensing)

Mechanical Characteristics	
Weight	720g
Installation	Embedded front installation

Certifications	FCC FCC 47 CFR Part 15 Subpart B CE EN IEC 62368-1/EN IEC 62311/EN IEC 61000-3-2/EN IEC 61000-3-3 EN 55032/EN 55035 EN 301 489-1/EN 301 489-3/EN 301 489-17/EN 301 489-52 EN 301 328/EN 301 440/EN 301 511/EN 301 908-1/EN 301 908-2

3.2 Installation

The unit should be installed according to relevant safety guidelines and requirements. Attention should be paid to local regulations and guidance. Avoid exposure to vibration, high temperatures.

3.2.1 Panel Mount

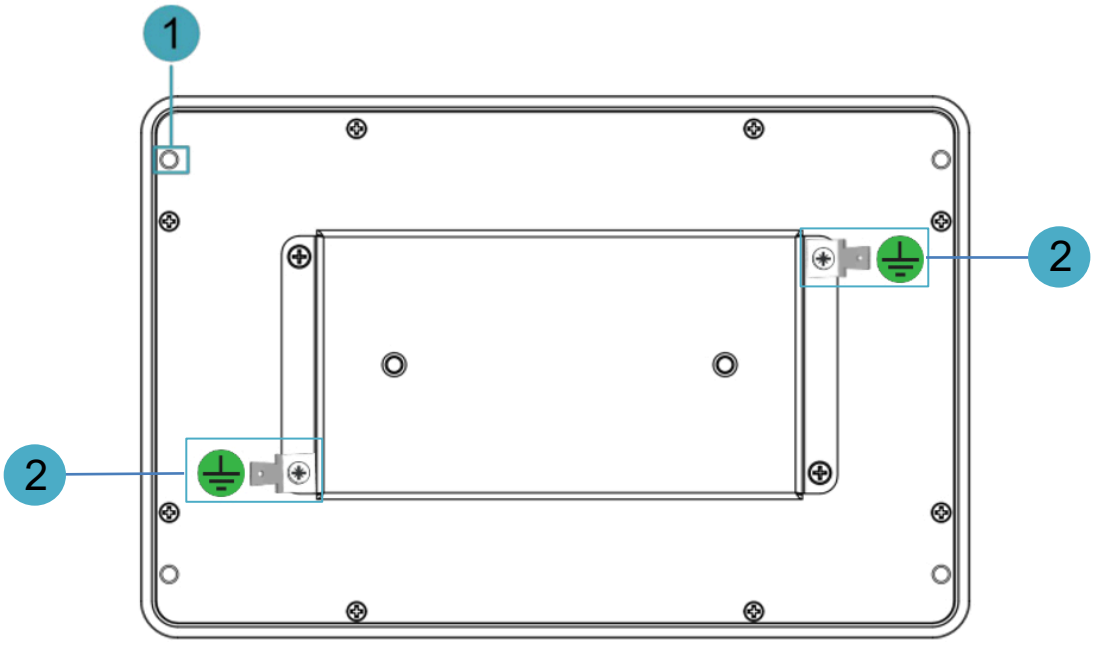


Figure 1: Rear Panel

No.	Function Definition
1	4 x Installation holes, which are used to fix the clips to the device.
2	2 x Spade connectors for grounding

1. The opening size of the cabinet required to fit this HMI is shown in figure 2 below:

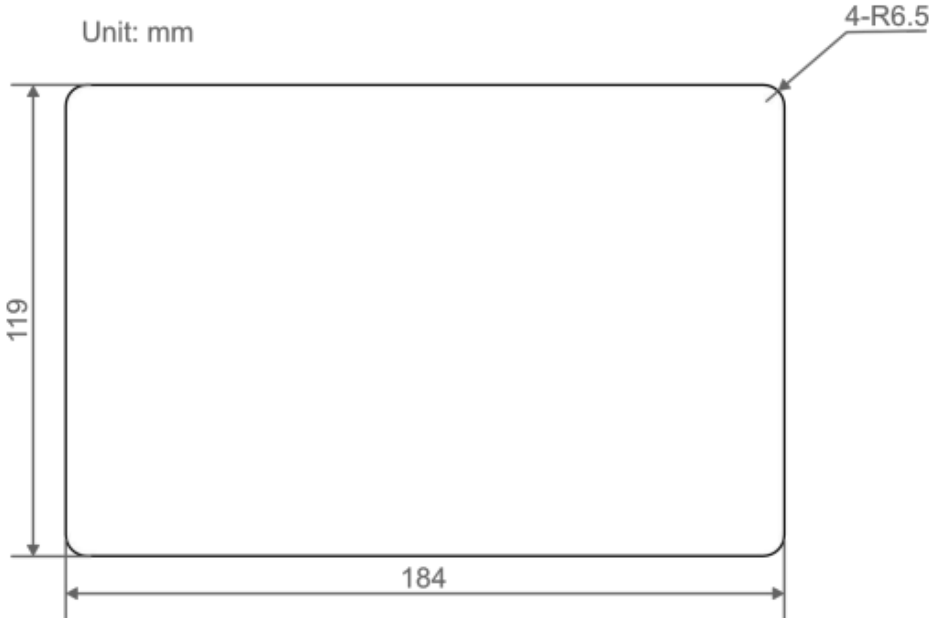


Figure 2: Cabinet hole size

2. Use the supplied 4 M4x8 screws to pass through the mounting clips and tighten it to fix the clip to the device; then use 4 M4x16 screws to pass through the clip and tighten to the mounting panel.

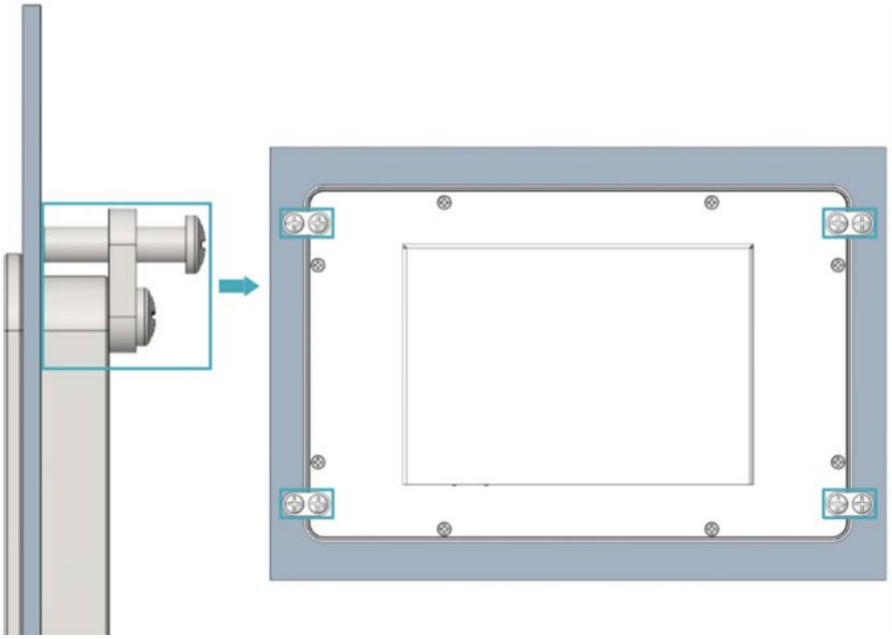


Figure 3: Panel installation

3.2.2 MMCU Connection

1. Wire the Power Supply Unit as shown in Figure 4.
2. Plug in the 5V supply cable given into the USB-C ‘PWR IN’ port (Included in the box).
3. Connect an Ethernet cable from the LAN port of the HMI to the LAN port of the MMCU.
4. Apply power. HMI starts-up with the ebm-papst logo followed by the MMCU configuration web server page.

Note: USB and HDMI ports are disabled.

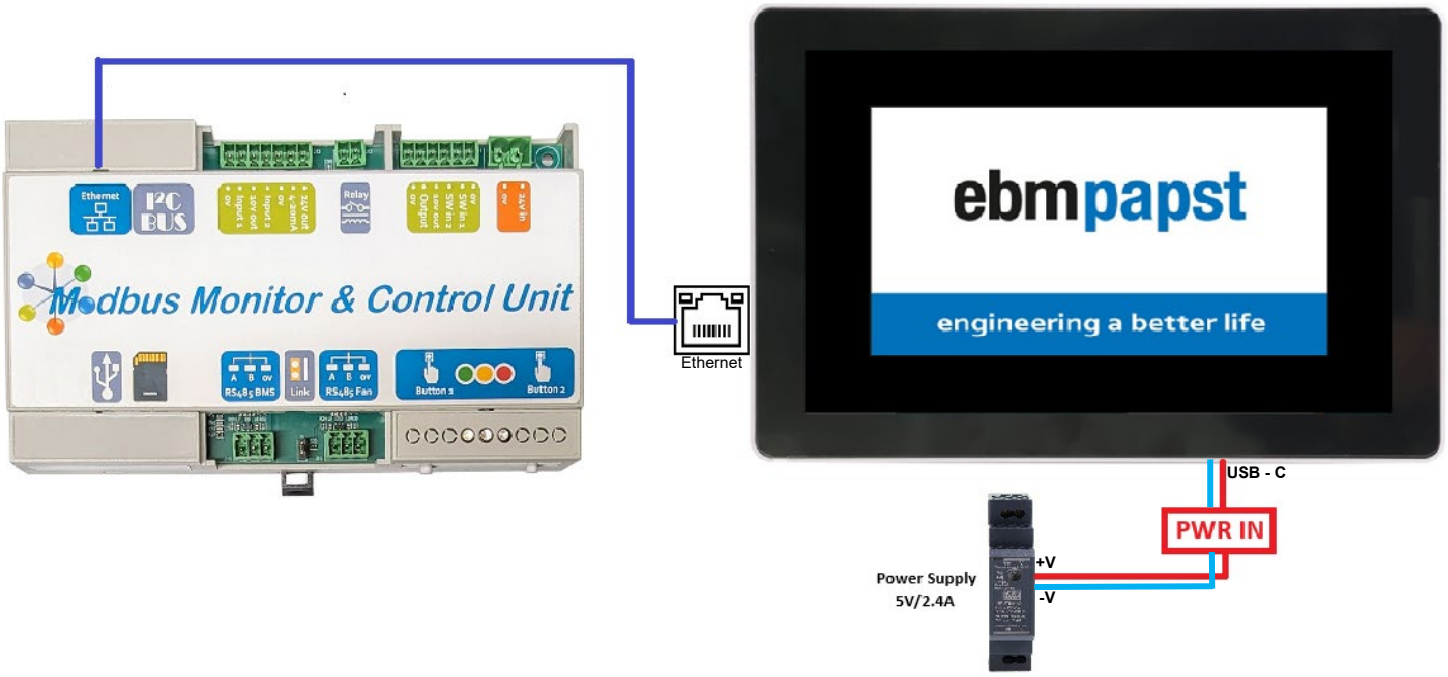


Figure 4: HMI with MMCU

4.0 Specification

4.1 Overview

The HMI is designed to access the web server page hosted by the MMCU for configuration and control. Refer to the MMCU OMI for more information on the MMCU web server interfacing.

The HMI resorts to the screensaver page after 10 minutes of no interaction (Figure 2), followed by power saving mode (blank screen). This feature is set to avoid image persistence and to save energy. Tap once on the display panel to wake up the screen.

Web pages can be refreshed by using the pull to refresh feature on the browser.

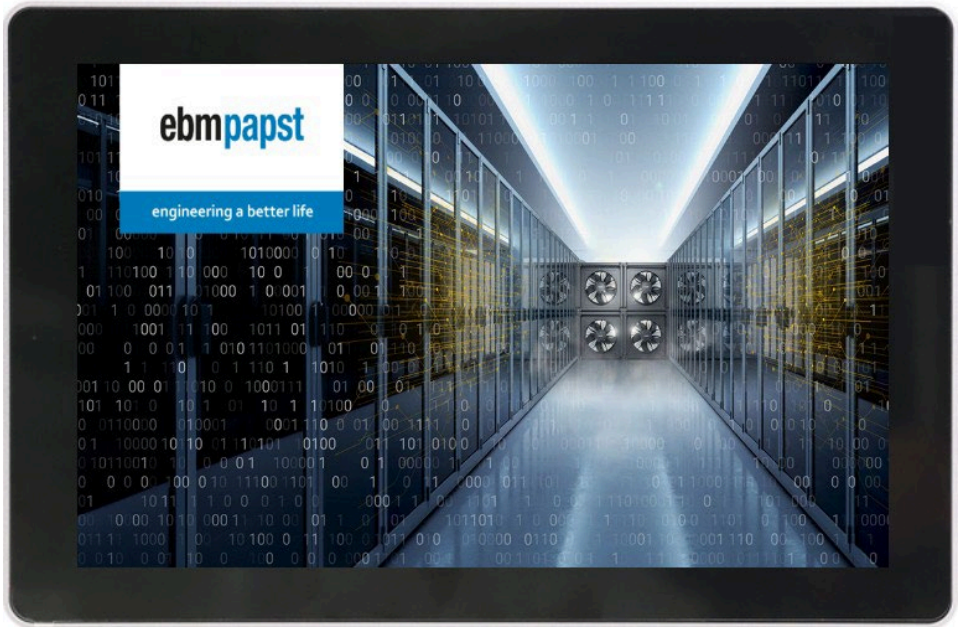


Figure 5: Screensaver mode

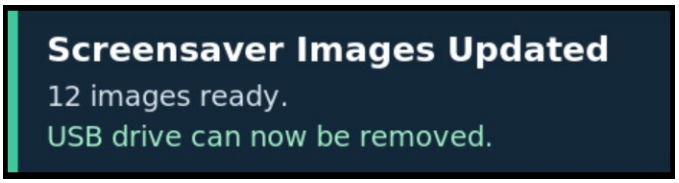
4.1.1 Update Screensaver Images

The HMI is supplied with a default selection of ebm-papst product images for the screensaver. These can be replaced with customer-specific images using a USB flash drive, without requiring any additional software or HMI configuration.

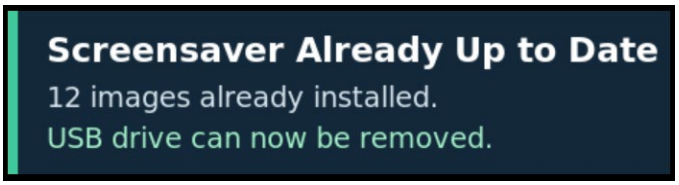
For optimal display quality, images should have a resolution of 1024 × 600 pixels. A minimum of two images is recommended to provide variation and avoid continuously displaying a single static image.
To upload or replace screensaver images:

1. Prepare the USB drive. Create a folder named “screensavers” in the root directory of a FAT32- or exFAT-formatted USB flash drive.

2. Copy all the desired images directly inside the screensavers folder. JPG, JPEG and PNG formats are supported. Any image filename may be used; no specific naming convention is required.
3. Insert the prepared USB drive into one of the available USB ports on the HMI.
4. The HMI automatically detects the drive, validates the images and copies them into its internal storage.
5. Wait for confirmation. Once the images have been successfully imported, a confirmation message appears in the bottom-right corner of the HMI screen:

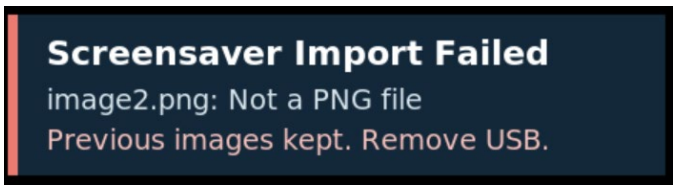


If the images are identical to those already installed, the following message is displayed instead:



6. Once either confirmation appears, disconnect the USB drive. The message will automatically disappear. The selected images are retained in the HMI's internal storage and will be displayed during subsequent screensaver operation, including after restarting the HMI.

7. If one or more images is corrupted or not in supported format, the following message is displayed:



Remove the corrupted image or update it to the supported format.

Note: For normal operation, a maximum of 100 images per slideshow is recommended. Individual image files must not exceed 25 MB, and the total image collection must not exceed 1 GB.
To change the images again, simply replace the contents of the screensavers folder on the USB drive and repeat the procedure.

5.0 Dimensions

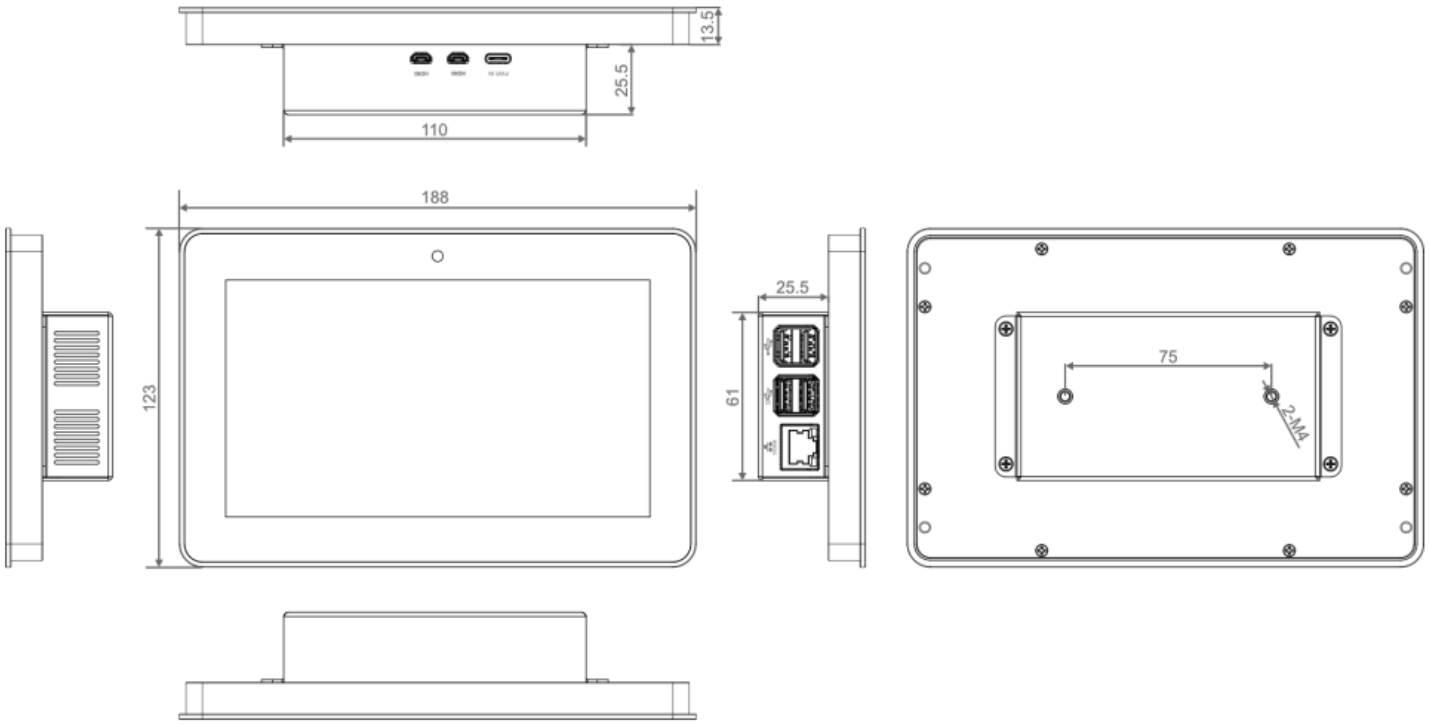


Figure 6: Dimensions

6.0 WEEE (Waste Electrical and Electronic Equipment)

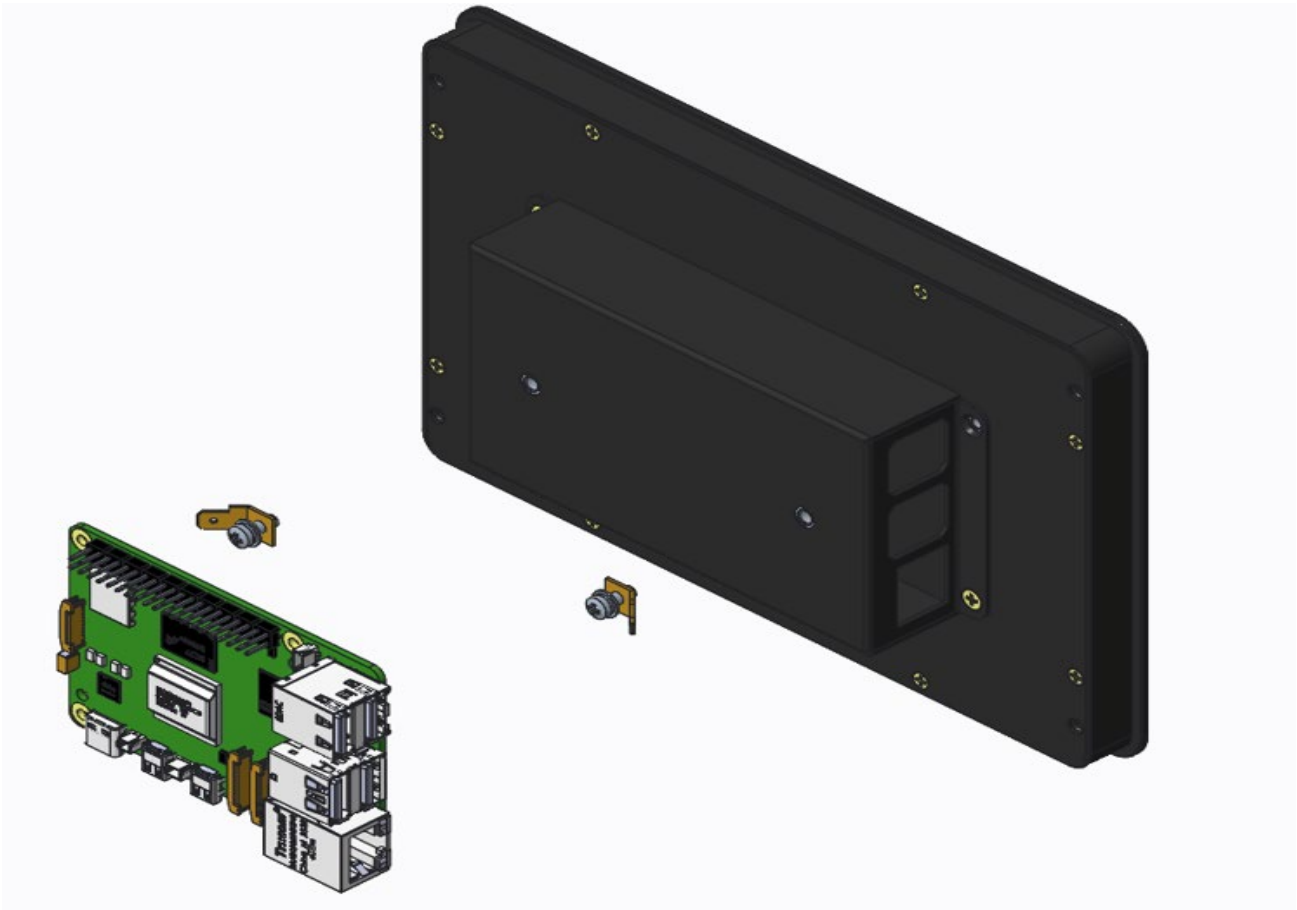
ebm-papst UK Ltd complies with the Waste Electrical and Electronic Equipment (WEEE) Regulations through membership of a producer compliance scheme (PCS) as a B2B producer. EEE Producer registration number: WEE/CA0209WR.

7.0 End of life

This product has been designed to consider end-of-life disposal. If the product has come to the end of its life, the unit can be easily disassembled for the components to be recycled. The product has been designed to meet the requirement of the REACH directives.

The product contains the following principal components:

- Aluminium outer casing / enclosure
- Metal internal panels / brackets
- Steel screws and other metal fasteners
- 7-inch TFT LCD display module
- Capacitive touch panel with front glass
- Raspberry Pi 5 single-board computer
- Printed circuit boards with electronic components and soldered assemblies
- USB, Ethernet, power, and internal board connectors
- Micro SD card, USB-C cable and power supply unit



8.0 Take back policy

As part of our commitment to minimise the disposal of Waste Electrical and Electronic Equipment (WEEE) customers can return the HMI at the end of its life. Please contact us on 01245 468555 for details and issue of an end-of-life RMA number.

9.0 Transport & Storage

PCBs not housed in enclosure should be transported in anti-static build-up bag or static dissipative bags.

- Store in a dry environment.
- Storage temperature: -20°C to +60°C.

10.0 Maintenance and servicing

There are no user serviceable parts.

11.0 CE Certificates

The product has been CE marked. The certificates are available upon request.

OMI-DSP2000-2026-11-V02

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