



VTT-HS-9A981

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VTT-HS-9A981 USER GUIDE

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CAUTION

Handling and operation of the product is permitted only for trained personnel within a work place that is access controlled. Please follow the "General Safety Instructions" supplied with the system.

NOTICE

You find the most recent version of the "General Safety Instructions" online in the download area of this product.

Revision History

Revision	Brief Description of Changes	Date of Issue	Author
1.0	Initial Issue	2022-Oct-05	ykl

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Customer Comments

If you have any difficulties using this user guide, discover an error, or just want to provide some feedback, contact Embedian support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Symbols

The following symbols may be used in this manual



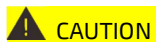
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE indicates a property damage message.



CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



Electric Shock!

This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of products. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.



ESD Sensitive Device!

This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.



HOT Surface!

Do NOT touch! Allow to cool before servicing.



This symbol indicates general information about the product and the user guide. This symbol also indicates detail information about the specific product configuration.

For Your Safety

Your new Embedian product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Embedian product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

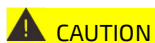
As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.



CAUTION

Warning

All operations on this product must be carried out by sufficiently skilled personnel only.



CAUTION

Electric Shock!



Before installing a non hot-swappable Embedian product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.

Special Handling and Unpacking Instruction

NOTICE

ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

Lithium Battery Precautions

If your product is equipped with a lithium battery, take the following precautions when replacing the battery.



Danger of explosion if the battery is replaced incorrectly.

- Replace only with same or equivalent battery type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

General Instructions on Usage

In order to maintain Embedian's product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Embedian and described in this user guide or received from Embedian Support as a special handling instruction, will void your warranty.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present user guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Quality and Environmental Management

Embedian aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements.

Disposal and Recycling

Embedian's products are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- Improve the environmental performance of all those involved during the lifecycle of EEE



Environmental protection is a high priority with Embedian.

Embedian follows the WEEE directive

You are encouraged to return our products for proper disposal.

Packing List

Your product package should include the items listed below.

If any of the items below is missing, contact the seller from whom you have purchased the product.

Packing List
1 x VTT-HS-9A981
4 x M3 machine screws
4 x Hex Nuts

Ordering Information

Part Number	Description
VTT-HS-9A981	Heat Sink with 15mm x 15mm x 1.3mm thermal pad for Embedian pITX-MX8M-PLUS SBC

Table of Contents

USER GUIDE	1
VTT-HS-9A981 USER GUIDE.....	3
Disposal and Recycling	8
Packing List.....	10
Ordering Information	10
Chapter 1 Introduction	12
Chapter 2 Technical Specifications.....	12
Chapter 3 Heatsink Dimensions	13
Chapter 4 Assembly	14

Chapter 1 Introduction

The VTT-HS-9A981 Heatsink is a complete thermal solution for Embedian pITX-MX8M-PLUS SBC. Heatsink is mounted to the pITX-MX8M-PLUS SBC by means of 4 screws of M3 machine screws to custom enclosure.

The VTT-HS-9A981 is a MUST for pITX-MX8M-PLUS SBC.

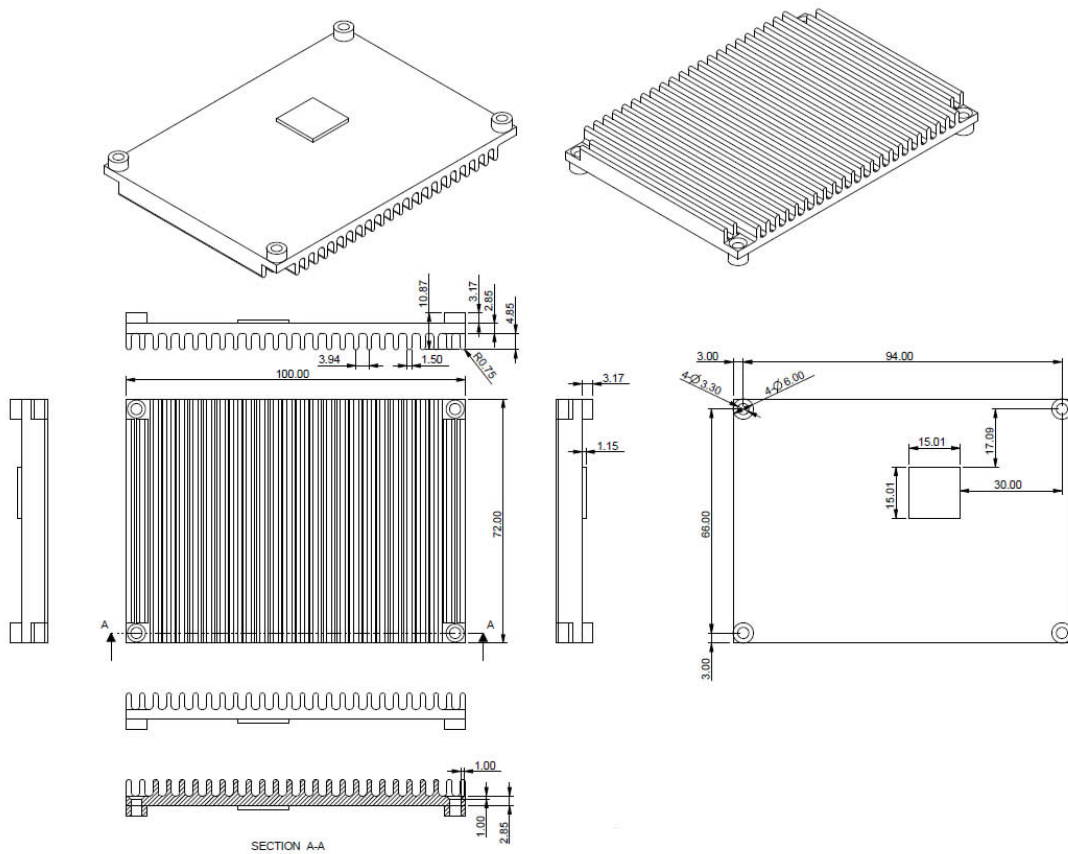
Chapter 2 Technical Specifications

The following table shows the technical specifications of the heatsink.

<i>Material</i>	<i>Aluminum alloy AL6063-T5</i>	<i>Remarks</i>
Coating	Black anodized	
Thermal Conductivity	190 to 221 W/(m-K)	Temperature Range: 40°C to 100°C
Weight	40g	
TIM, Thermal Conductivity	6.0W/(m-K)	TIM: Thermal interface material (Fujipoly GR-Hm)
TIM, Flame Rating	UL 94V-0	
TIM, Volume Resistivity	0.1 Ohm-meter	
TIM, Dielectric Constant	26.7 @ 1000 Hz	
TIM, Dielectric Breakdown Voltage	19000V	
TIM, Continuous Use Temperature	-40°C to +280°C	
TIM, Density	3.7 g/cc	
TIM, Tensile Strength	0.3 MPa	
TIM, Hardness Bulk Rubber	26 ~ 52 (Shore C)	
Thermal resistance (Module-Alu)	TBD	Please note that the temperature of the board is measured by the on-board thermal sensor.
Thermal resistance (Alu-Ambient without fan)	< 4.40 °C/W	
Thermal resistance (Alu-Ambient with fan)	< 1.80 °C/W	Test fan details: Dimensions: 40mmX40mmX10.5mm (LxWxH) Speed: 4200 RPM Air Flow: 4.2 CFM

Chapter 3 Heatsink Dimensions

The following drawings illustrate the mechanical dimensions of the heatsink. All measurements are in millimeter (mm).



Chapter 4 Assembly

Assembly must be done carefully since putting the heatsink in a wrong way will damage the board or may prevent the system from working properly. The illustration shown below represents how to attach the heatsink solution.

4.1 Assembly Procedure

The following procedure demonstrates how to attach the VTT-HS-9A981 heatsink to the piTX-MX8M-PLUS SBC to complete the heatsink solution. Please read the procedure very carefully to ensure that the board does not get damaged. Necessary precautions should be taken to avoid the electrostatic charges.

1. Clean the processor's top surface using an anti-static cloth.
2. Carefully remove the plastic foil from the TIM.



3. Carefully align the mounting holes {1}, {2}, {3}, and {4} on the heatsink to be in-line with fasteners available on the Pico-ITX board. Place the heatsink on the system.



4. Use 4 units of M3 sized screws to affix the heatsink together with the system.

