SYS-E100-12T-H

Getting Started Guide for AWS IoT Greengrass

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Document Revision History

Date	Revision	Description
09/12/2023	1.0	Initial release.

Table of Contents

1   Document information

1.1   Document revision history
[Mandatory section]

1.2   Applicable operating systems for this guide
[Mandatory section] Clearly define which host and device operating systems this guide is applicable to.

2   Overview

The Supermicro SuperServer E100-12T is a compact edge server comprised of the CSE-E101 chassis and the X12STN-H-WOHS motherboard with Intel® Core™ i7-1185GRE processors to support a wide range of performance requirements and use-cases.

It is specifically suited for applications such as IoT Edge computing, IoT gateway, Smart Building, machine automation, digital signage, and medical/healthcare.

3   Hardware description

3.1   Datasheet
Datasheet link:

https://www.supermicro.com/en/products/system/Box_PC/SYS-E100-12T-H.cfm

Quick Start Guide:

https://www.supermicro.com/QuickRefs/superserver/Box_PC/QRG-2459.pdf

3.2   Standard kit contents

Unit consists of the SYS-E100-12T-H (a single-piece device, motherboard with CPU/chassis are assembled).

The AC Power adapter MCP-250-10137-0N with AC cable is also included.

It is recommended to order the system with DRAM and SSD pre-installed.

For purchase requests, please follow the web link and click "Get pricing"

https://www.supermicro.com/en/products/system/Box_PC/SYS-E100-12T-H.cfm

3.3   User provided items

- Keyboard, mouse, monitor and related cable (HMDI, USB-A or USB-C)
- Network connection via RJ45 Ethernet cable

If not pre-installed, the user also needs to provide and install DRAM and SSD storage (please refer the datasheet and quick start guide for tested material lists).

https://www.supermicro.com/en/products/system/Box_PC/SYS-E100-12T-H.cfm

3.4   3rd party purchasable items

N/A

3.5   Additional hardware references

https://www.supermicro.com/en/products/system/Box_PC/SYS-E100-12T-H.cfm

4   Set up your development environment

4.1   Tools installation (IDEs, Toolchains, SDKs)

1. **AWS SDK**
   The AWS SDK helps take the complexity out of coding by providing APIs for many AWS services including AWS IoT Core. All AWS SDKs are enabled for IoT Core. The single, downloadable package includes the code library, code samples, and documentation.

2. **AWS IoT Device SDK**
   The AWS IoT Device SDK helps you to easily and quickly connect your hardware device or your mobile device to AWS IoT Core. It offers enhanced features so that you can seamlessly interact with the device gateway and the device shadow that will enable you to quick start your development. The Device SDK supports a variety types of devices, from basic to industrial hardware devices.

3. The AWS IoT Device Client is a free, open-source, and modular device-side reference implementation. It allows you to easily connect your devices to AWS IoT Core, and access AWS IoT Device Management and AWS IoT Device Defender features by default. It is written in C++ and can be compiled and installed on Embedded Linux-based IoT devices.

4. To get started on your device, download the AWS IoT Device Client source code from GitHub and learn more using the readme.

4.2   Other software required to develop and debug applications for the device
N/A

4.3   Additional software references
N/A

5   Set up device hardware
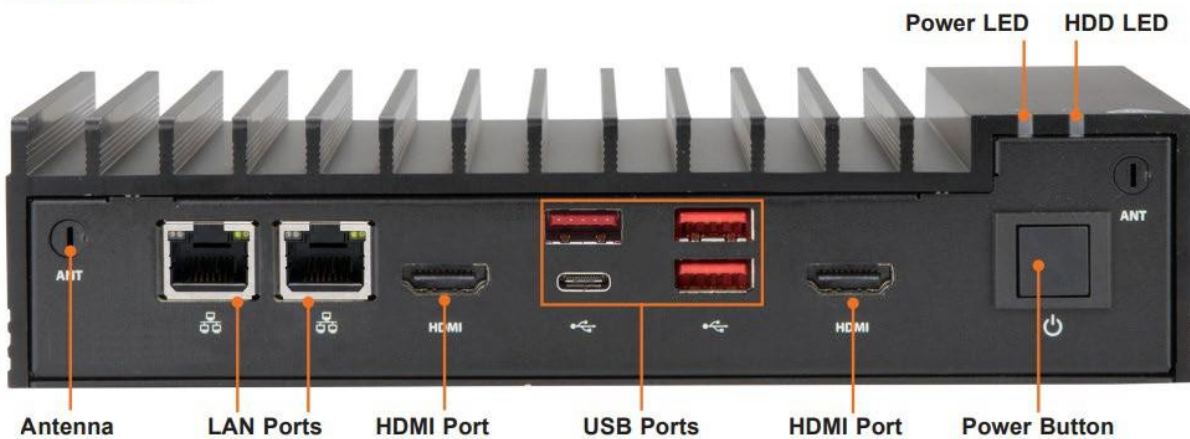User Manual: MNL-2459.pdf (supermicro.com)

Figure 1-1. Front View

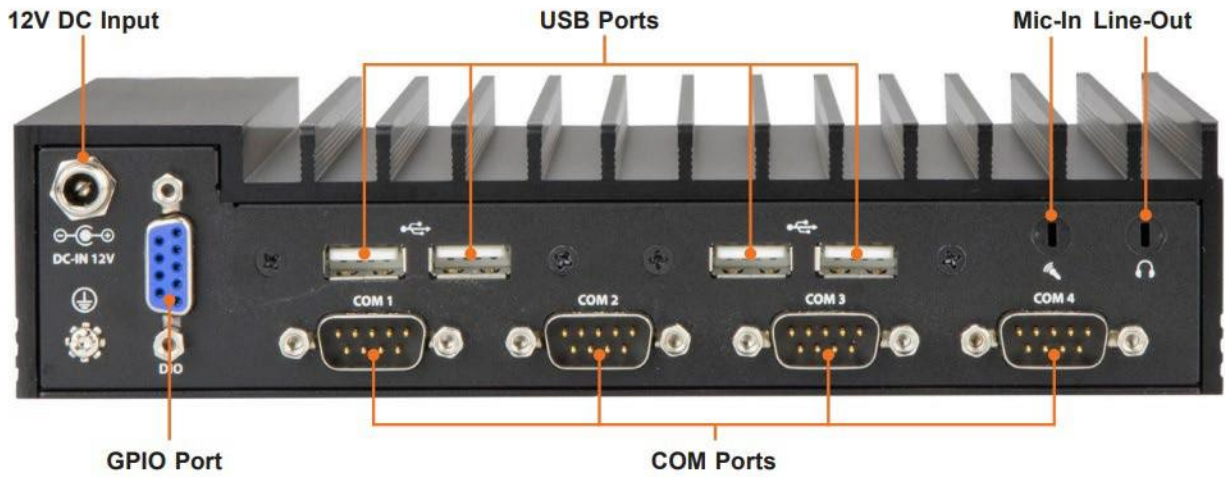| System Features: Front	
Item	**Description**
Antenna	WiFi antenna
LAN Ports	2.5GbE LAN ports (Intel I225-IT)
HDMI Ports	Left port: HDMI 2.0b (4K60Hz), Right port: HDMI 1.4b
USB Ports	USB 3.2 ports, lower left port is USB C port
Power Button	System on/off button
Power LED	Indicates power is being supplied to the system
HDD LED	Indicates data is being written to the storage drives.

Rear View

Figure 1-2. Rear View

System Features: Rear	
Item	**Description**
12VDC Input	Power input for system
GPIO Port	General Purpose Digital Input/Output port
COM Ports	COM1 and COM2: RS232/422/485 serial ports COM3 and COM4: RS232 serial ports
USB Ports	USB 2.0 ports
Mic-In	Microphone jack (optional)
Line-Out	Line out jack for audio (optional)

SYS-E100-12T-H: Getting Started Guide for AWS IoT Greengrass
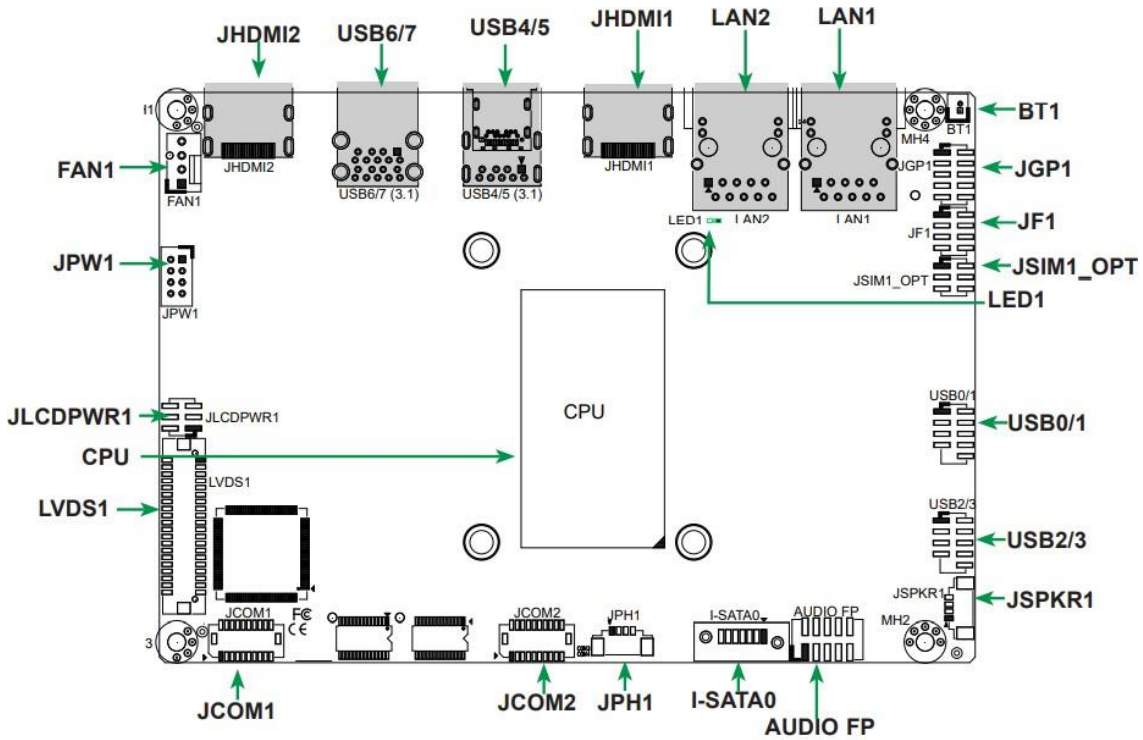
Top Layout
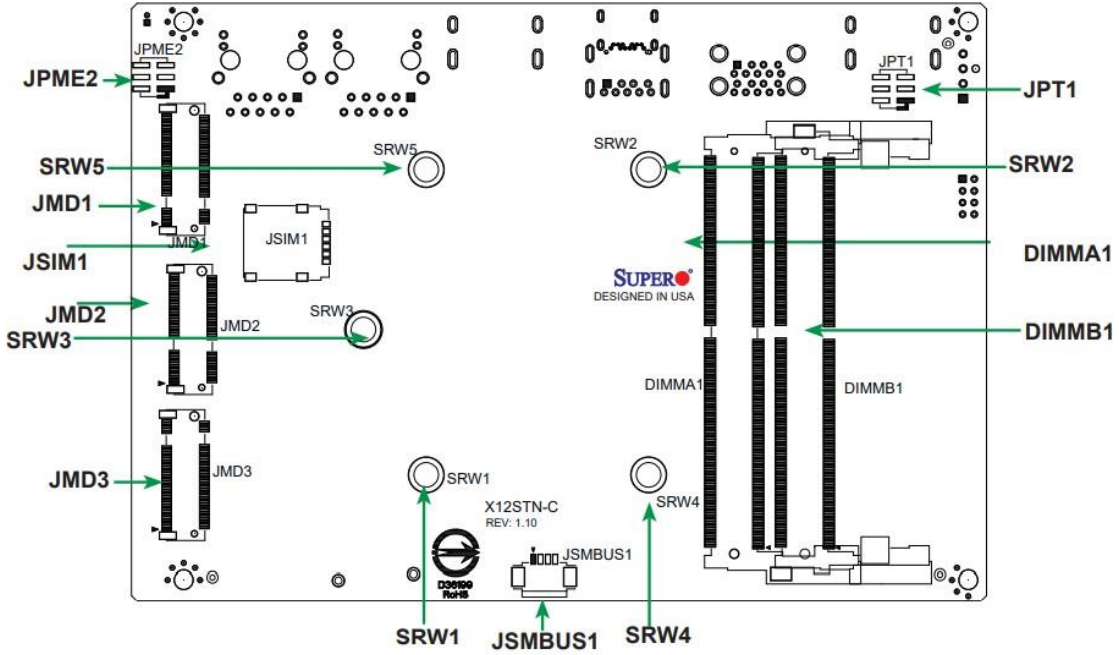
Bottom Layout

Quick Reference Table

Jumper	Description	Default Setting
JLCDPWR1	LVDS Panel VCC Power Source Selection	Pins 1-3 (3.3V)
JPME2	CMOS	Pins 1-3
JPME2	Manufacturing Mode	Pins 4-6 (Normal)
JPT1	TPM Enable	Pins 1-3 (Enable)
JPT1	Force Power On	Pins 2-4 (Force power on)
JSIM1_OPT	SIM Detect Option	Pins 2-4 (Normal)

LED	Description	Status
LED1	Onboard Power LED	Green: System On Off: System Off (power cable not connected)

Connector	Description
AUDIO FP	Front Panel Audio Header (Mic-In/Line-Out)
BT1	Battery Connector
FAN1	System Fan Header
I-SATA0	SATA 3.0 Port
JCOM1: COM1/COM2	COM Header (two RS232/RS422/RS485 ports)
JCOM2: COM3/COM4	COM Header (two RS232 ports)
JF1	Front Control Panel Header (Power/HDD LED, Reset, Power button)
JGP1	8-bit General Purpose I/O Header
JHDMI1	Back Panel HDMI 2.0b Port
JHDMI2	Back Panel HDMI 1.4b Port
JMD1	M.2 Slot B-Key 2280/2242/3042 (SATA 3.0 or PCIe / USB 3.1 /USB 2.0)
JMD2	M.2 Slot E-Key 2230 (PCIe / USB 2.0 / CVNi)
JMD3	M.2 Slot M-Key 2280/2242 (Gen4 PCIe x4)
JPH1	4-pin HDD Power Connector
JPW1	8-pin 12-24V Power Connector
JSIM1	JSIM1 Nano SIM Card Slot (bottom side)
JSMBUS1	System Management Bus Header
JSPKR1	Audio Speaker Output with 3W Amplifier
LAN1, LAN2	2.5 GbE Ethernet Ports
LVDS1	Dual Channel 48-bit LVDS Connector
SRW1 ~ SRW5	M.2 Mounting Holes
USB0/1	Front Accessible USB 2.0 Headers
USB2/3	Front Accessible USB 2.0 Headers
USB5	Front Panel USB 3.1 Type C Port (supports DP1.4a with alt. mode)
USB4/6/7	Front Panel USB 3.1 Type A Ports

Supported Drivers: https://www.supermicro.com/wdl/driver/

5.1   Accessing the System

The CSE-E101-03 features a removable bottom cover to access the inside of the chassis.
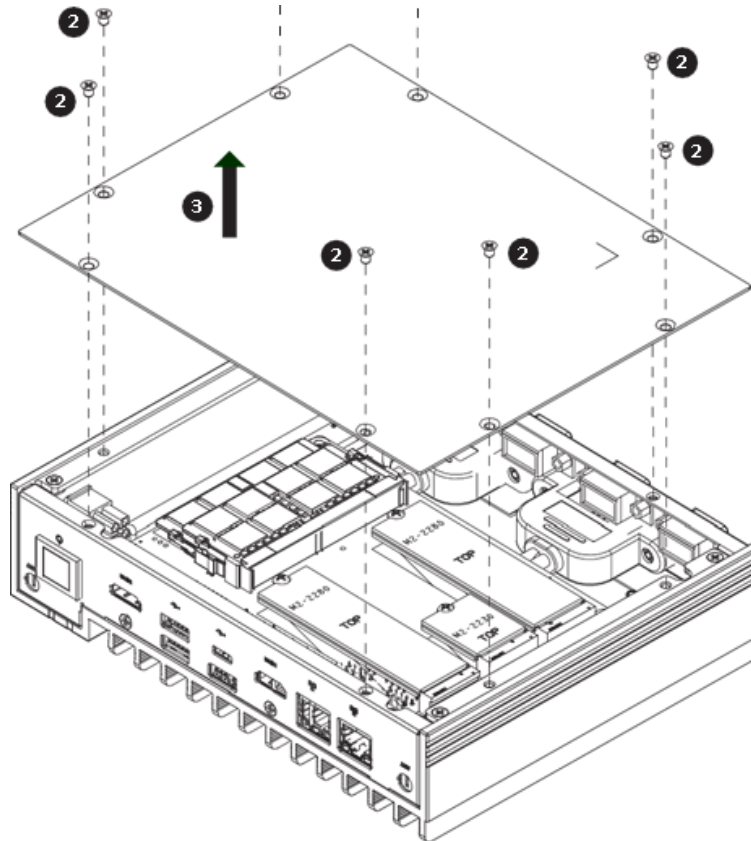
5.2   Removing the Bottom Cover

1. Remove power from the system.
2. Remove the eight screws that hold the cover in place.
3. Lift the cover up and off the chassis.

Caution: Except for short periods of time, do not operate the server without the cover in place. The chassis cover must be in place to prevent misuse.
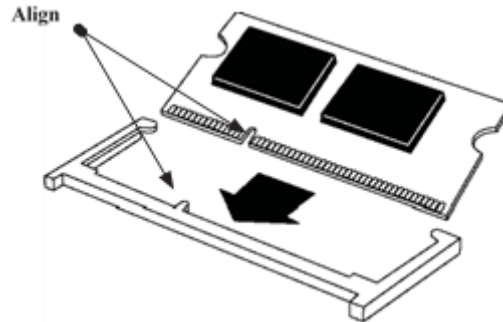
5.3   Installing Memory

Caution: Exercise extreme care when installing or removing DIMM modules to prevent damage.

5.3.1   SO-DIMM Installation

1. Remove the bottom cover as described in the previous section.
2. Position the SO-DIMM module's bottom key so it aligns with the receptive point on the slot.
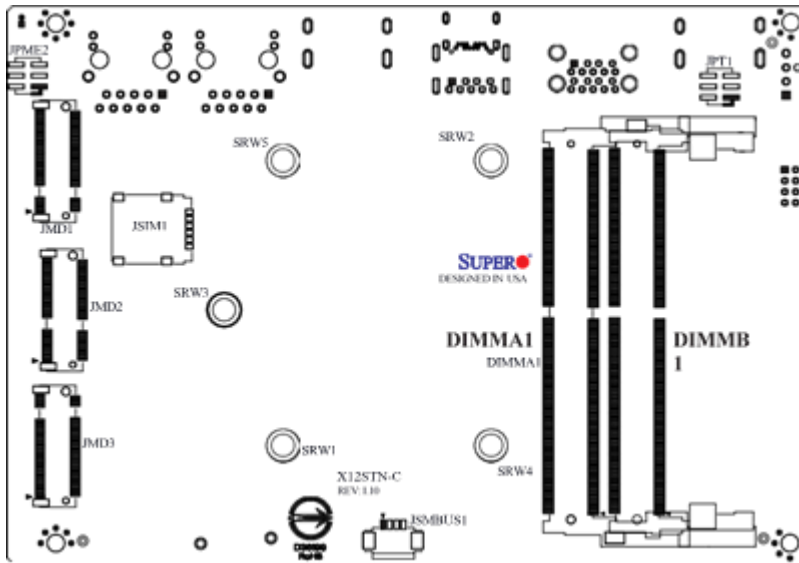

3. Insert the SO-DIMM module vertically at about a 45 degree angle. Press down until the module locks into place.
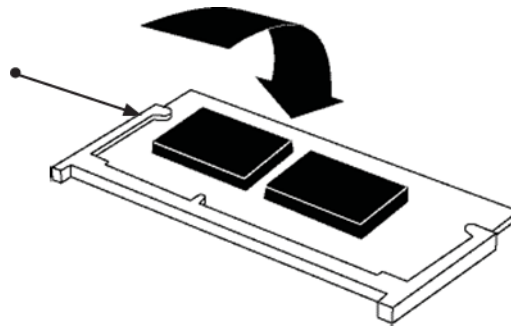
5.3.2   SO-DIMM Removal

1. Push the side clips at the end of the slot to release the SO-DIMM module.
2. Pull the SO-DIMM module up to remove it from the slot.

6   Solid State Storage

This motherboard supports internally mounted solid state storage cards by means of three M.2 slots. When an M.2 NVMe storage card is installed, an accompanying heatsink (optional) must also be installed to prevent the card from overheating.
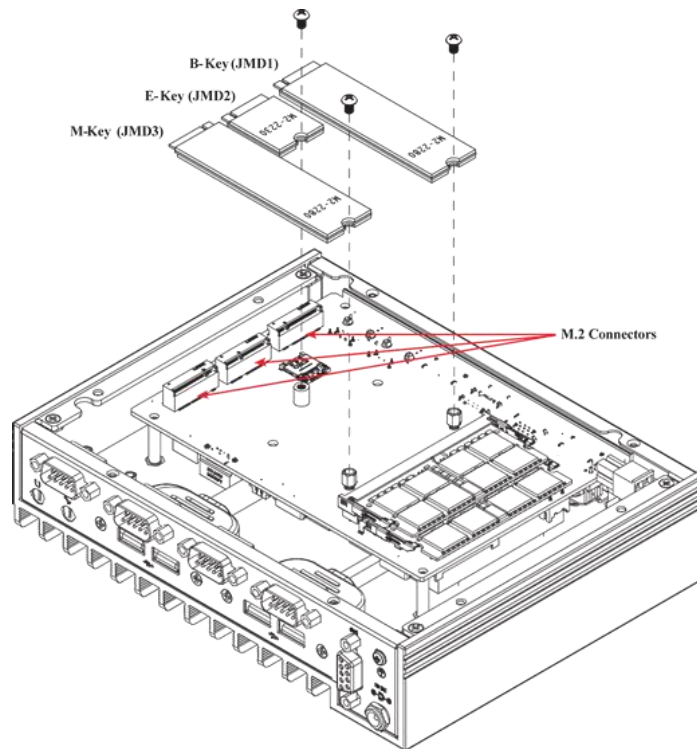
6.1.1 Installing an M.2 Card

1. Gently insert the M.2 card into the connector.
2. Use a screw to secure the M.2 card to the standoff.

7 Driver Installation

The Supermicro website contains drivers and utilities for your system at:

https://www.supermicro.com/wdl/driver/

Some of these must be installed, such as the chipset driver.

After accessing the website, go to https://www.supermicro.com/wdl/CDR_Images/ and locate the ISO file for your motherboard. Download this file to a USB flash drive or a DVD. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at http://www.supermicro.com/products/. Find the product page for your motherboard, and "Download the Latest Drivers and Utilities".

Insert the flash drive or disk and the screenshot shown below should appear.

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you must re-boot the system before moving on to the next item on the list. The bottom icon with a CD on it allows you to view the entire contents.

8 About AWS IoT Greengrass

To learn more about AWS IoT Greengrass, see [How AWS IoT Greengrass works](#) and [What's new in AWS IoT Greengrass Version 2](#).

9 Greengrass prerequisites

Refer to the online AWS documentation at Set up your AWS Account. Follow the steps outlined in the sections below to create your account and a user and get started:

- [Sign up for an AWS account](#)
- [Create a user and grant permissions](#)
- [Open the AWS IoT console](#)

Pay special attention to the Notes.

10 Install AWS IoT Greengrass

Follow the online guide to *[Install with automatic provisioning](#)*. Refer to the instructions in the following steps:

- [Set up the device environment](#)
- [Provide AWS credentials to the device](#). For development environments, you can use the option "Use long-term credentials from an IAM User". An example of how to do this is shown below:
  ```
  export AWS_ACCESS_KEY_ID=<the access key id for your user>
  export AWS_SECRET_ACCESS_KEY=<the secret access key for your user>
  ```
- [Download the AWS IoT Greengrass Core software](#)
- [Install the AWS IoT Greengrass Core software](#)

11 Create a "Hello World" component

A component is a software module that runs on AWS IoT Greengrass core devices. Components enable you to create and manage complex applications as discrete building blocks that you can reuse from one Greengrass core device to another. Every component is composed of a recipe and artifacts.

11.1 Create the component on your edge device

Follow the instructions online under the section [Develop and test a component on your device](#) to create a simple component on your device.

11.2 Upload the "Hello World" component

Follow the instructions online at [Create your component in the AWS IoT Greengrass service](#) to upload your component to the cloud, where it can be deployed to other devices as needed.

11.3 Deploy your component

Follow the instructions online at [Deploy your component](#) to deploy and verify that your component is running.

12 Debugging

N/A

13 Troubleshooting

Pleaser refer to the user manual and FAQ section for your product using the links below

User Manual

https://www.supermicro.com/manuals/superserver/Box_PC/MNL-2459.pdf

FAQ

Online Support | Support - Super Micro Computer, Inc.

For more information regarding troubleshooting AWS Greengrass, refer to the online documentation *Troubleshooting Greengrass v2*.

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