<MA-X3xx series>

Getting Started Guide for AWS IoT Greengrass

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# Document information

## Document revision history

|  |  |
| --- | --- |
| Date | Notes |
| 2023/7/5 | first edition |

## Applicable operating systems for this guide

Based on Ubuntu 22.04LTS

MA-X3xx series software can be downloaded from the following URL

[*https://ma-tech.centurysys.jp/doku.php?id=download\_software:max3xx:start*](https://ma-tech.centurysys.jp/doku.php?id=download_software:max3xx:start)

※AWS IoT Greengrass core software is not installed.

# Overview

The product overview is as follows

[*https://www.centurysys.co.jp/products/linuxserver/max300s.html*](https://www.centurysys.co.jp/products/linuxserver/max300s.html)

※Please check the English translation with your browser or other functions.

The MA-X3xx series is a compact IoT gateway for data collection, processing, and communication with a 64-bit dual-core CPU and 10 GByte memory . Built on a Linux platform and ARM-based hardware architecture, it provides Ethernet, digital I/O, serial ports (RS-232, RS-485), SD card, and USB. Optionally, it offers 4G LTE module, analog inputs, and DC outputs to meet a wide range of application requirements. The MA-X3xx series is equipped with a convenient WebUI function that allows users to configure Ethernet, 4G LTE, Static Route, DHCP Server, Firewall, WireGuard, and other settings. Config management and Syslog retrieval can also be performed via the Web UI, making it easy for customers to manage the MA-X3xx series on their own. The hardware supports fanless design, a wide range of power supply inputs (9V to 36V), and operating temperatures (-20°C to +60°C). The environmentally resistant and versatile interfaces allow installation in a variety of indoor and outdoor environments, including offices, factories, and unattended environments. The MA-X3xx series is ideal for use as an IoT gateway that collects and integrates data acquired from each interface and transmits it to the cloud!

# Hardware description

## Datasheet

The Hardware datasheet is below.

[*https://www.centurysys.co.jp/downloads/linuxserver/max300/index.html#init\_tab5*](https://www.centurysys.co.jp/downloads/linuxserver/max300/index.html#init_tab5)

Please also check our website.

（ハードウェア仕様）

[*https://www.centurysys.co.jp/products/linuxserver/max300s.html*](https://www.centurysys.co.jp/products/linuxserver/max300s.html)

The MA-X3xx series includes the following three models

* MA-X300
* MA-X320/L
* MA-X/320/LAD

The differences by model are as follows

※MA-X300 hardware is a model with a basic base interface.

※MA-X320/L hardware is a model of MA-X320 with an additional LTE communication module.

※MA-X320/LAD hardware is a model with an analog input interface added to the MA-X320/L.

## Standard kit contents

Indicate contents of the standard shipping hardware package as indicated below:

* MA-X3xx main unit

Must be purchased separately

* AC adapter

[*https://www.centurysys.co.jp/products/option/as\_adapter/index.html*](https://www.centurysys.co.jp/products/option/as_adapter/index.html)

* LTE Antenna

[*https://www.centurysys.co.jp/products/option/antenna\_list.html*](https://www.centurysys.co.jp/products/option/antenna_list.html)

For MA-X3xx console connection

* Console Cable（USB micro B）

## User provided items

If necessary, the following cables

* Ethernet cable
* RS-232 cable
* Digital IO cable

## 3rd party purchasable items

Not Applicable

# Set up your development environment

## Tools installation (IDEs, Toolchains, SDKs)

No IDE.

See below for setting up the development environment.

[*https://ma-tech.centurysys.jp/doku.php?id=max3xx\_devel:start*](https://ma-tech.centurysys.jp/doku.php?id=max3xx_devel:start)

Software development (MA-X3xx series)

* Setting up the development environment (self)
* Setting up the development environment (cross, for arm64)
* Emulator setup (QEMU)
* Preparing the kernel and various packages
* Preparing the root filesystem
* Customizing the root filesystem
* Create firmware

Firmware customization example

* Adding JVMs

*<https://ma-tech.centurysys.jp/doku.php?id=max3xx_devel:customize_firmware:add_openjdk_jre:start>*

* AWS IoT Greengrass V2 ready

*<https://ma-tech.centurysys.jp/doku.php?id=max3xx_devel:customize_firmware:add_aws_iot_greengrass_v2:start>*

# Set up device hardware

Product Page

[*https://www.centurysys.co.jp/products/linuxserver/max300s.html*](https://www.centurysys.co.jp/products/linuxserver/max300s.html)

Description of key components and external ports

* datasheet

[https://www.centurysys.co.jp/downloads/linuxserver/max300/index.html#init\_tab5](https://www.centurysys.co.jp/downloads/linuxserver/max300/index.html%23init_tab5)

* Serial Ports

*<https://ma-tech.centurysys.jp/doku.php?id=use_serialport:start>*

* Digital I/O

[*https://ma-tech.centurysys.jp/doku.php?id=use\_di\_do:start*](https://ma-tech.centurysys.jp/doku.php?id=use_di_do:start)

* Analog Port

https://ma-tech.centurysys.jp/doku.php?id=use\_ai:start

Table showing LEDs on the device and the states indicated

[*https://ma-tech.centurysys.jp/doku.php?id=led\_examples:start*](https://ma-tech.centurysys.jp/doku.php?id=led_examples:start)

# About AWS IoT Greengrass

To learn more about AWS IoT Greengrass, see [How AWS IoT Greengrass works](https://docs.aws.amazon.com/greengrass/v2/developerguide/how-it-works.html) and [What's new in AWS IoT Greengrass Version 2](https://docs.aws.amazon.com/greengrass/v2/developerguide/greengrass-v2-whats-new.html).

# Greengrass prerequisites

Refer to the online documentation detailing the [prerequisites](https://docs.aws.amazon.com/greengrass/v2/developerguide/getting-started-prerequisites.html) needed for AWS IoT Greengrass. Follow the instructions in the following sections:

[Step 1: Set up an AWS account](https://docs.aws.amazon.com/greengrass/v2/developerguide/getting-started-set-up-aws-account.html)

[Step 2: Set up your environment](https://docs.aws.amazon.com/greengrass/v2/developerguide/getting-started-set-up-environment.html)

# Install AWS IoT Greengrass

Follow the online guide to [*Install with automatic provisioning*](https://docs.aws.amazon.com/greengrass/v2/developerguide/quick-installation.html).  Refer to the instructions in the following steps:

* [Set up the device environment](https://docs.aws.amazon.com/greengrass/v2/developerguide/quick-installation.html#set-up-device-environment)
* [Provide AWS credentials to the device](https://docs.aws.amazon.com/greengrass/v2/developerguide/quick-installation.html#provide-installer-aws-credentials). 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](https://docs.aws.amazon.com/greengrass/v2/developerguide/quick-installation.html#download-greengrass-core-v2)
* [Install the AWS IoT Greengrass Core software](https://docs.aws.amazon.com/greengrass/v2/developerguide/quick-installation.html#run-greengrass-core-v2-installer)

# Create a “Hello World” component

## Create the component on your edge device

Follow the instructions online under the section [Develop and test a component on your device](https://docs.aws.amazon.com/greengrass/v2/developerguide/create-first-component.html) to create a simple component on your device.

## Upload the “Hello World” component

Follow the instructions online at [Create your component in the AWS IoT Greengrass service](https://docs.aws.amazon.com/greengrass/v2/developerguide/upload-first-component.html) to upload your component to the cloud, where it can be deployed to other devices as needed.

## Deploy your component

Follow the instructions online at [Deploy your component](https://docs.aws.amazon.com/greengrass/v2/developerguide/deploy-first-component.html) to deploy and verify that your component is running.

# Troubleshooting

For more information, refer to the online documentation [*Troubleshooting Greengrass v2*](https://docs.aws.amazon.com/greengrass/v2/developerguide/troubleshooting.html).

If you have any questions about MA-X3xx, please contact us by

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and New Year holidays.