Release Notes

DA16200 DA16600 Linux Driver

Abstract

This document contains the release notes for Renesas Electronics' DA16200 and DA16600 Linux Driver.

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1 Terms and Definitions

CLK	Clock
MAC	Media Access Control
SDIO	Secure Digital Input Output
SPI	Serial Peripheral Interface
Wi-Fi	Wireless Fidelity

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2 Release Data

Table 1: Information Table

Software	Wi-Fi driver source and firmware image (DA16200 and DA16600)
Device Number	DA16200/DA16600
Software Release Date	Nov. 09, 2023
Software Version Number	5.2.1.2

3 Related Documents and References

[1] DA16200, Datasheet, Renesas Electronics
[2] DA16600, Datasheet, Renesas Electronics

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4 Release Description

This release note is for a Linux driver which supports Wi-Fi communication using the DA16200 and DA16600 module. It has been verified on the RZ/G2L(C) EVK from Renesas Electronics.

4.1 Version 5.2.1.2

This version is Integrated Driver packages for SPI and SDIO. The SDK 5.2.1.2 includes improvements and new features listed in Table 2.

4.1.1 Overview

This is for Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

4.1.2 New Features in 5.2.1.2

Table 2: 5.2.1.2 New Features

Issue Number	Description
5.2.1.2 - 01	Rewrote the entire codes based on GPL license

4.1.3 Fixes and Improvements since 5.1.1.0

Table 3: 5.2.1.2 Fixes and Improvements

Issue Number	Description
None	None

4.1.4 Known Issues in 5.2.1.2

Table 4: 5.2.1.2 Known Issues

Issue Number	Description
None	None

4.1.5 Known Limitations in 5.2.1.2

Table 5: 5.2.1.2 Known Limitations

Issue Number	Description
None	None

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5 Release History

5.1 Version 5.1.1.0

This version is Integrated Driver packages for SPI and SDIO. The SDK 5.1.1.0 includes improvements and new features listed in Table 6 and bug fixes and improvements listed in Table 7.

5.1.1 Overview

This is for Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.1.2 New Features in 5.1.1.0

Table 6: 5.1.1.0 New Features

Issue Number	Description
5.1.1.0 - 01	Changed the transmitting and receiving method between Host and Firmware to improve the stability

5.1.3 Fixes and Improvements since 5.0.3.3

Table 7: 5.1.1.0 Fixes and Improvements

Issue Number	Description
5.1.1.0 - 01	Fixed firmware no response issue during data communication between host and firmware
5.1.1.0 - 02	Fixed the issue of SDIO state changed into abnormal while Host driver turning on and off repeatedly

5.1.4 Known Issues in 5.1.1.0

Table 8: 5.1.1.0 Known Issues

Issue Number	Description
None	None

5.1.5 Known Limitations in 5.1.1.0

Table 9: 5.1.1.0 Known Limitations

Issue Number	Description
None	None

5.2 Version 5.0.3.3

Driver packages for SPI and SDIO are included in this version. The following release note covers the updates of SPI driver package (version 5.0.2.9) and SDIO driver package (version 5.0.1.17).

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5.2.1 Overview

This is for Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.2.2 New Features in 5.0.3.3

Table 10: 5.0.3.3 New Features

Issue Number	Description
SPI-5.0.2.9 - 01	Added RF Test Commands
SDIO-5.0.1.17 - 01	Added RF Test Commands

5.2.3 Fixes and Improvements since 5.0.3.2

Table 11: 5.0.3.3 Fixes and Improvements

Issue Number	Description
SPI-5.0.2.9 - 01	None
SDIO-5.0.1.17 - 01	None

5.2.4 Known Issues in 5.0.3.3

Table 12: 5.0.3.3 Known Issues

Issue Number	Description
SPI-5.0.2.9 - 01	[AP] Unstable at TCP Rx long run test with High Throughput

5.2.5 Known Limitations in 5.0.3.3

Table 13: 5.0.3.3 Known Limitations

Issue Number	Description
SPI-5.0.2.9 - 01	[AP] In AP mode, the number of peer devices that can be connected is limited to one.

5.3 Version 5.0.3.2

Driver packages for SPI and SDIO are included in this version. The following release note covers the updates of SPI driver package (version v5.0.2.8). No updates on SDIO, which can be found in the Revision History section (version 5.0.1.16).

5.3.1 Overview

The version 5.0.2.8 is for SPI interface Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

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5.3.2 New Features in 5.0.3.2

Table 14: 5.0.3.2 New Features

Issue Number	Description
SPI-5.0.2.8 - 01	None

5.3.3 Fixes and Improvements since 5.0.3.1

Table 15: 5.0.3.2 Fixes and Improvements

Issue Number	Description
SPI-5.0.2.8 - 01	Improved stability of Linux driver installation (insmod)
SPI-5.0.2.8 - 02	Improved stability of AP mode operation

5.3.4 Known Issues in 5.0.3.1

Table 16: 5.0.3.2 Known Issues

Issue Number	Description
SPI-5.0.2.8 - 01	[AP] Unstable at TCP Rx long run test with High Throughput

5.3.5 Known Limitations in 5.0.3.2

Table 17: 5.0.3.2 Known Limitations

Issue Number	Description
SPI-5.0.2.8 - 01	[AP] In AP mode, the number of peer devices that can be connected is limited to one.

5.4 Version 5.0.3.1

Driver packages for SPI and SDIO are included in this version. The following release note covers the updates of SPI driver package (version v5.0.2.5). No updates on SDIO, which can be found in the Revision History section (Version 5.0.1.16).

5.4.1 Overview

The version 5.0.3.1 is for SPI interface Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.4.2 New Features in 5.0.3.1

Table 18: 5.0.3.1 New Features

Issue Number	Description
5.0.3.1 – 01	None

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5.4.3 Fixes and Improvements since 5.0.1.16

Table 19: 5.0.3.1 Fixes and Improvements

Issue Number	Description
5.0.3.1 - 01	Improved stability of STA mode in SPI interface

5.4.4 Known Issues in 5.0.3.1

Table 20: 5.0.3.1 Known Issues

Issue Number	Description
5.0.3.1 – 01	[AP] Not stable at high throughput TCP Rx test

5.4.5 Known Limitations in 5.0.2.5

Table 21: 5.0.3.1 Known Limitations

Issue Number	Description
5.0.3.1 - 01	[AP] In Soft AP mode, the number of peer devices that can be connected is limited to one.

5.5 Version 5.0.1.16

5.5.1 Overview

This version is for SDIO and SPI interface Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.5.2 New Features in 5.0.1.16

Table 22: 5.0.1.16 New Features

Issue Number	Description
5.0.1.16 - 01	Added feature for debug trace log

5.5.3 Fixes and Improvements since 5.0.1.13

Table 23: 5.0.1.16 Fixes and Improvements

Issue Number	Description
5.0.1.16 – 01	Improved stability of STA/AP mode in SDIO interface

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5.5.4 Known Limitations in 5.0.1.16

Table 24: 5.0.1.16 Known Limitations

Issue Number	Description
5.0.1.16 - 01	[STA/AP] Soft AP should be established in the same channel as STA connection.
5.0.1.16 - 02	[STA/AP] Soft AP can afford two STA connections.

5.6 Version 5.0.1.13

5.6.1 Overview

This version is for SDIO and SPI interface Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.6.2 New Features in 5.0.1.13

Table 25: 5.0.1.13 New Features

Issue Number	Description
5.0.1.13 – 01	Added DTS configuration for SPI gpio_irq0, gpio_irq1 and gpio_reset.

5.6.3 Fixes and Improvements since 5.0.1.12

Table 26: 5.0.1.13 Fixes and Improvements

Issue Number	Description
5.0.1.13 - 01	Improved stability of STA/AP mode in SDIO interface

5.6.4 Known Issues in 5.0.1.13

Table 27: 5.0.1.13 Known Issues

Issue Number	Description
5.0.1.13 - 01	[STA/AP] Intermittent exceptions occur when all devices connected to Soft AP transmit data at the same time.

5.6.5 Known Limitations in 5.0.1.13

Table 28: 5.0.1.13 Known Limitations

Issue Number	Description
5.0.1.13 - 01	[STA/AP] Soft AP should be established in the same channel as STA connection.
5.0.1.13 - 02	[STA/AP] Soft AP can afford two STA connections.

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5.7 Version 5.0.1.12

5.7.1 Overview

This version is for SDIO and SPI interface Linux drivers which support Wi-Fi communication using the DA16200 and DA16600 module. They have been verified on the RZ/G2L(C) EVK from Renesas Electronics.

5.7.2 New Features in 5.0.1.12

Table 29: 5.0.1.12 New Features

Issue Number	Description
5.0.1.12 - 01	Concurrent mode (STA/Soft AP) for SDIO interface only

5.7.3 Fixes and Improvements since 5.0.1.7

Table 30: 5.0.1.12 Fixes and Improvements

Issue Number	Description
5.0.1.12 – 01	Fixed various exception errors

5.7.4 Known Issues of 5.0.1.12

Table 31: 5.0.1.12 Known Issues

Issue Number	Description
5.0.1.12 - 01	[STA/AP] Intermittent exceptions occur when all devices connected to Soft AP transmit data at the same time.

5.7.5 Known Limitations of 5.0.1.12

Table 32: 5.0.1.12 Known Limitations

Issue Number	Description
5.0.1.12 – 01	[STA/AP] Soft AP should be established in the same channel as STA connection.
5.0.1.12 – 02	[STA/AP] Soft AP can afford two STA connections.

5.8 Version 5.0.1.7

5.8.1 Overview

This version is for SDIO interface Linux driver which supports Wi-Fi communication using the DA16200 and DA16600 module. It has been verified on the RZ/G2L EVK from Renesas Electronics.

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5.8.2 New and Updated Features in 5.0.1.7

Table 33: 5.0.1.7 New Features

Issue Number	Description
5.0.1.7 - 01	Build 32/64-bit platform without change
5.0.1.7 - 02	Support for building pre-built object

5.8.3 Known Issues in 5.0.1.7

Table 34: 5.0.1.7 Known Issues

Issue Number	Description
5.0.1.7 – 01	[Soft AP] Not support country code change
5.0.1.7 – 02	[Soft AP] Among 4 connections, error for 1 terminal reconnection
5.0.1.7 – 03	[Soft AP] Not support channel 13

5.8.4 Known Limitations of 5.0.1.7

Table 35: 5.0.1.7 Known Limitations

Issue Number	Description
5.0.1.7 - 01	Connect four STAs simultaneously in Soft AP mode

5.9 Version 5.0.1.6

5.9.1 Overview

This version is for SDIO interface Linux driver which supports Wi-Fi communication using the DA16200 and DA16600 module. It has been verified on the RZ/G2L EVK from Renesas Electronics.

5.9.2 New and Updated Features in 5.0.1.6

Table 36: 5.0.1.6 New Features

Issue Number	Description
5.0.1.6 - 01	Added HW reset function

Table 37: 5.0.1.6 Fixes and Improvements

Issue Number	Description
5.0.1.6 - 01	Enabled AMPDU feature
5.0.1.6 - 02	Improved Tx/Rx Throughput
5.0.1.6 - 03	Increased STA count connected to Soft AP
5.0.1.6 - 04	Improved Stability

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5.9.3 Known Issues in 5.0.1.6

Table 38: 5.0.1.6 Known Issues

Issue Number	Description
5.0.1.6 - 01	Scanning abort during data transmission in Concurrent mode

5.9.4 Known Limitations of 5.0.1.6

Table 39: 5.0.1.6 Known Limitations

Issue Number	Description
5.0.1.6 - 01	Connect four STAs simultaneously in Soft AP mode

5.10 Version 5.0.2.0

5.10.1 Overview

This version is for SPI interface Linux driver which supports Wi-Fi communication using the DA16200 and DA16600 module. It has been verified on the RZ/G2L EVK from Renesas Electronics.

5.10.2 New and Updated Features in 5.0.2.0

Table 40: 5.0.2.0 New Features

Issue Number	Description
5.0.2.0 - 01	Added HW reset function

5.10.3 Known Issues in 5.0.2.0

Table 41: 5.0.2.0 Known Issues

Issue Number	Description
5.0.2.0 - 01	Intermittent Data Stopping Symptoms During Long-Term Tests

5.10.4 Known Limitations of 5.0.2.0

Table 42: 5.0.2.0 Known Limitations

Issue Number	Description
5.0.2.0 - 01	Concurrent mode

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Appendix A Software Versioning Rules

This describes the software version number and does not apply to document version number used in this document. Each version number consists of four parts: MAJOR. MINOR. REVISION. and ENGINEERING_REV.
For example, the version 1.2.3.4 has MAJOR version 1, MINOR version 2, REVISION version 3, and ENGINEERING_REV version 4.

#MAJOR is incremented by 1 when a project undergoes major modifications, for example, OS changes. It usually changes when the project source undergoes major restructuring and affects most repositories, and version numbering should begin at 1.

#MINOR is incremented by 1 and used for concurrent projects that need to be detached from the main repository for special reasons. The version numbering should begin at 0.

#REVISION is incremented by 1 after any official release. For example, a project release corresponds to release number such as X.Y.0.0, X.Y.1.0, etc. The version numbering should begin at 0.

#ENGINEERING_REV is incremented by 1 for engineering updates, so the figure represents the total number of releases since the official SDK package release. The version numbering should begin at 0.

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Document Revision History

This section summarizes the changes made to this document and not to the Software that this document describes.

Revision	Date	Description
5.2.1.2	Nov. 09, 2023	V5.2.1.2 release for SDIO and SPI
5.1.1.0	Mar. 31, 2023	V5.1.1.0 release for SDIO and SPI
5.0.3.3	Feb. 02, 2023	V5.0.3.3 release for SDIO and SPI integrated package Version has been split into two: ● V5.0.2.9 release for SPI interface ● V5.0.1.17 release for SDIO interface
5.0.3.2	Jan. 31, 2023	V5.0.3.2 release for SDIO and SPI integrated package Version has been split into two: ● V5.0.2.8 release for SPI interface ● V5.0.1.16 release for SDIO interface
1.6	Jan. 12, 2023	V5.0.3.1 release for SDIO and SPI integrated package Version has been split into two: ● V5.0.2.5 release for SPI interface ● V5.0.1.16 release for SDIO interface
1.5	Nov. 30, 2022	V5.0.1.16 release for SDIO/SPI interface
1.4	Nov. 09, 2022	V5.0.1.13 release for SDIO/SPI interface
1.3	Oct. 31, 2022	V5.0.1.12 release for SDIO/SPI interface
1.2	Sep. 28, 2022	V5.0.1.7 release for SDIO interface
1.1	Aug. 30, 2022	● V5.0.1.6 release for SDIO interface ● V5.0.2.0 release for SPI interface
1.0	May 20, 2022	First release

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Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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