RENESAS

SSP v1.5.2

Release Note

Renesas Synergy™ Platform
Synergy Software
Synergy Software Package

Renesas Synergy™ Platform

SSP v1.5.2 Release Note

Contents

1. Introduction

This document describes the release notes for **Synergy Software Package (SSP) version 1.5.2**.

2. Release Information

SSP Release Version	v1.5.2
Release Date	Nov 16, 2018

The intended audience for this release note is Renesas Synergy™ customers, prospective customers, partners, and support staff. This release note describes the known issues and fixed issues in SSP v1.5.2.

Notes:

1. This package contains the standalone installer for SSP v1.5.2 patch release that includes ALL SSP modules (unlike SSP v1.5.1, which only packaged a partial set of SSP modules). Users can install SSP v1.5.2 without installing SSP v1.5.0 or SSP v1.5.1 releases in the same folder. SSP v1.5.2 installer also includes complete SSP v1.5.1 (ALL SSP modules, including the modules that were unchanged and not included in SSP v1.5.1 distribution) and installs it in the same folder as 1.5.2. This repackaging of SSP v1.5.1 with 1.5.2 is necessary to work around a known issue with upgrading projects from SSP v1.5.1 to SSP v1.5.2 caused by unexpected behavior in e^2 studio and SSC v6.2.1.

2. The SSP v1.5.0 User's Manual (Revision 1.10) has been updated with error corrections and enhancements to graphics and content has been posted on Gallery under SSP v1.5.0 and SSP v1.5.2 releases. Users should download and use this revised edition of the document.

3. If you are using the SSP v1.5.0 User's Manual provided with the Platform Installer, you should replace it with this updated revision of the User's Manual, revision 1.10. The Platform Installer for SSP v1.5.0 has not been updated with the revised User Manual.

4. The Addendum for the SSP User's Manual corresponding to SSP v1.5.2 is being provided as a separate standalone document instead of it being concatenated with the SSP v1.5.0 User's manual (as was the case for SSP v1.5.1). This addendum should be used in conjunction with the new revision (revision 1.10) of the complete SSP v1.5.0 User's Manual in PDF format.

3. Synergy MCU Groups Supported

MCU Groups: S7G2, S5D9, S5D5, S5D3, S3A7, S3A6, S3A3, S3A1, S124, S128, and S1JA.

Note: Currently, S1JA and S5D3 kits are only available for limited customer engagements.

4. Software Tools and Hardware Kits Supported with this SSP Release

Note: There are no updates to the tools and hardware since SSP v1.5.0.

Tool	Version	Description
e^2 studio	6.2.1	Software development and debugging tool. Link: https://www.renesas.com/en-us/products/synergy/software/tools.html
IAR Embedded Workbench® for Renesas Synergy™	8.23.1	Software development environment and debugging tool. Link: https://www.renesas.com/en-us/products/synergy/software/tools.html
SSC	6.2.1	Synergy Standalone Configurator. Used in combination with IAR EW for Synergy. Link: https://www.renesas.com/en-us/products/synergy/software/tools.html
GNU Arm Compiler	4.9.3	GNU Arm® compiler GCC_4.9.3.20150529
IAR Compiler	8.23.1	IAR Arm® compiler toolchain

Tool	Version	Description
PE-HMI1	2.0	Product Example (PE) for Human Machine Interface to evaluate Renesas Synergy™ S7G2 MCU Group
DK-S7G2	3.1	Development Kit for Renesas Synergy™ S7G2 MCU Group
SK-S7G2	3.3	Starter Kit for Renesas Synergy™ S7G2 MCU Group
PK-S5D9	1.0	Promotion Kit for Renesas Synergy™ S5D9 MCU Group
TB-S5D5	1.1	Target Board Kit for Renesas Synergy™ S5D5 MCU Group
TB-S5D3#	See note	Target Board Kit for Renesas Synergy™ S5D3 MCU Group
DK-S3A7	2.0	Development Kit for Renesas Synergy™ S3A7 MCU Group
TB-S3A6	1.0	Target Board Kit for Renesas Synergy™ S3A6 MCU Group
TB-S3A3	1.0	Target Board Kit for Renesas Synergy™ S3A3 MCU Group
TB-S3A1*	1.0	Target Board Kit for Renesas Synergy™ S3A1 MCU Group
DK-S128	1.1	Development Kit for Renesas Synergy™ S128 MCU Group
DK-S124	3.1	Development Kit for Renesas Synergy™ S124 MCU Group
TB-S1JA*	1.0	Target Board Kit for Renesas Synergy™ S1JA MCU Group
J-Link Software	6.32F	SEGGER J-Link® debug probe is the quasi standard for Arm® Cortex®-M based MCUs

Note: * Pre-production versions of these kits were used for SSP testing; results with production kits may vary slightly.
   # Target Board S5D3, Version 0.5a; Base Board S5D5, Version 0.6a

4.1   Version Information for Third-Party Products

Component	Version in 1.5.0	Version in 1.5.2
ThreadX®	5.8 SP1	5.8 SP1
NetX™	5.9 SP5	5.11
NetX Duo™	5.10 SP5	5.11
NetX Application bundle	5.9 SP5	5.11
NetX Duo Application bundle	5.10 SP5	5.11
NetX Web HTTP/HTTPS	5.11	5.11
USBX™ Host	5.8 SP3	5.8 SP3
USBX™ Device	5.8 SP3	5.8 SP3
FileX®	5.5 SP1	5.5 SP1
GUIX™	5.4.1	5.4.1
LevelX	5.4	5.4
TraceX®	5.2.0	5.2.0
GUIX Studio™	5.4.1.1	5.4.1.1
NetX Duo Secure	5.11	5.11 SP1
MQTT for NetX Duo	5.10 SP5	5.11
SNMP for NetX	5.11	5.11

Component	Version in 1.5.0	Version in 1.5.2
SNMP for NetX Duo	5.11	5.11
TES D/AVE 2D	3.17	3.17

5.   SSP Release Package and Installation Information

Before installing SSP standalone installer, ensure that the following items are installed on your PC:

- **Renesas e² studio ISDE v6.2.1** (download and install the e² studio Installer from Renesas.com at https://www.renesas.com/en-us/products/synergy/software.html)
- **GNU Arm® Compiler** (included with Renesas e² studio ISDE v6.2.1)

To install the SSP, follow these steps:

1. Download the following items for the SSP Release from Renesas.com:
   — **SSP_Distribution_1.5.2.zip** (SSP Package Installer, including SSP Package)
   — **Renesas Synergy Software Package (SSP) v1.5.2 Release Note**.
2. Unzip the package and run the **SSP_Distribution_1.5.2.exe installer**.
3. Install the SSP in the root folder of a compatible e² studio installation.

Note: The default installation folder for the SSP is **C:\Renesas\e2_studio**.

SSP documentation is available for download from the Synergy Software Package (SSP) page in Renesas Synergy Platform section, on Renesas.com. Sign in to the MyRenesas Account by using your existing MyRenesas or Synergy Gallery credentials, or by creating a new MyRenesas account.

6. Issues Fixed in 1.5.2 Release

6.1 Crypto/r_sce

Issue ID: 12039

The Crypto HAL modules require that the R_SCE be opened first to start using any crypto functionality and closed only at the end of the session after all the crypto modules are closed. Now, opening a crypto module without opening R_SCE will result in the API returning SSP_ERR_CRYPTO_NOT_OPEN.
Applies to: All MCUs with SCE

6.2 Licensing SSP Records

Issue ID: 12295

Changed permissions for NetX MQTT Client header file (nxd_mqtt_client.h) to public from private. This will make this file viewable/editable for all license types.
Applies to: All MCUs

6.3 NetX

Issue ID: 12294

FTP server now validates the month value while fetching volume entry label from some USB storage drives thereby avoiding the hard fault or stack corruption error when the month value is invalid.
Applies to: S7G2, S5D9, and S5D5 MCU Groups

Issue ID: 12401

DHCP option text changed from "Maximum DHCP Client State record on a interface" to "Maximum number of network interfaces for DHCP Client"
Applies to: All NetX/NetX Duo supported MCUs

Issue ID: 12422

The failure for file transfer (above 30 MB) using TFTP Client has now been resolved.
Applies to: S7G2, S5D9, and S5D5 MCU Groups

6.4 nxd_tls_secure

Issue ID: 12926

The sf_el_nx_crypto module now checks for the return code from the r_sce APIs. If the r_sce APIs return an error, the weak error callback function is called.
Applies to: S5 and S7 MCU Series

Issue ID: 13044

C++ applications using NetX Secure resulted in compiler error. The issue is resolved.
Applies to: All MCUs

6.5 r_adc

Issue ID: 13421

16-sample averaging did not work on S1JA when parameter checking was enabled.
Changed parameter checking code so that it allows 16-sample averaging on MCUs that do not support addition (S1JA).
Applies to: S1JA MCU Group

6.6 r_dtc

Issue ID: 13339

The SDADC and DALI events were not available in the Activation Source list in the Synergy Configuration tool for r_dtc and r_dmac. This is fixed.
Applies to: S1JA MCU Group

6.7 r_iwdt

Issue ID: 13034

IWDT open check was not verified in the other APIs of the IWDT API, which may result in undesirable behavior of that API/function.
Now, the user gets an SSP_ERR_NOT_OPEN error code when other APIs are called without calling R_IWDT_Open().
Applies to: All MCUs

Issue ID: 13366

If an NMI callback function is not provided during configuration while using the NMI interrupt, the IWDT driver exits by returning an assertion error without releasing the previously acquired hardware lock. This
 issue is fixed by unlocking the hardware resource when the NMI callback is NULL in R_IWDT_Open() API.
Applies to: All MCUs

6.8 r_riic

Issue ID: 13228

Earlier, the concurrent access to the driver had been protected by the use of a flag which is being shared among multiple invocations to check whether the driver is in use. A failure due to an expected context switch between checking and updating the flag is now prevented by moving it within a critical section.
Applies to: All MCUs

6.9 r_sci_i2c

Issue ID: 13051

The sci_siic_open_transfer_interface() function was not returning any error when the Rx or Tx transfer instances are not configured properly. Irrespective of whether the Rx transfer configuration was a success or failure, the function was returning the status of the Tx transfer configuration only. After adding the fix, the correct error value will be returned for the configuration status for Rx and Tx transfer instances.
Applies to: All MCUs

6.10 r_sdmmc

Issue ID: 13056

eMMC cards that take longer than one second to deassert the busy signal after CMD6 may not respond to read/write commands immediately after open because they are still busy. This issue is now fixed.
Applies to: S7G2, S5D9, S5D5, S5D3, S3A7, S3A3, and S3A1 MCU Groups

6.11 r_wdt

Issue ID: 13032

WDT open check parameter is now implemented for WDT module APIs. Now, the user gets an SSP_ERR_NOT_OPEN error code when other APIs are called without performing R_WDT_Open().

Applies to: All MCUs

Issue ID: 13364

If NMI callback function is not provided during configuration while using NMI interrupt, WDT driver exits by returning assertion error without releasing the previously acquired hardware lock. R_WDT_Open() API now releases the hardware lock before returning error when NMI callback pointer is NULL.
Applies to: All MCUs

6.12 sf_adc_periodic

Issue ID: 13033

1. ThreadX resources initialized in open API are not released if an error is returned. This causes failure of subsequent open calls in the framework. This issue is fixed by removing the redundant code where mutex was acquired.

2. sf_adc_periodic_close() API returned error if the lower level driver close() failed and the resources were not released. This is fixed by not checking the lower level driver close return values and by releasing the initialized resources.

Applies to: All MCUs

Issue ID: 13483

sf_adc_periodic framework currently does not support "r_sdadc" as a low level ADC driver. The option for selecting "r_sdadc" has been removed in the Synergy configuration tool for sf_adc_periodic framework.

Applies to: S1JA MCU Group

6.13 sf_cellular

Issue ID: 11418

Cellular framework sent redundant commands to configure the PPP authentication when NetX NSAL was used. This is now fixed to send AT command for PPP Authentication in case of Cellular On-Chip stack application only. NSAL or NetX based Cellular framework application will not send PPP authentication AT commands and such application will use NetX PPP stack APIs to perform the PPP Authentication.

Note: Cellular framework has not been verified on an authenticated Cellular network with PAP, CHAP.

Applies to: Cellular framework for NimbeLink CAT1, CAT3 and Quectel BG96 CATM1, and NB-IoT

Issue ID: 11846

2 MB file download is tested on CAT3 and BG96 (GSM and CATM1) modules.

Applies to: Cellular Framework

Issue ID: 12355

Calling nx_ip_delete() function will not de-initialize the WiFi or Cellular wireless module. For successful de-initialization of the module, the application should call wireless framework's close() API explicitly from the application thread. Typical de-initialization sequence by the application should be as follows.

For Cellular Framework:

1. networkDisconnect()
2. close()
3. nx_ip_delete()
4. nx_ppp_delete()

For WiFi Framework:

1. close()
2. nx_ip_delete()

Applies to: WiFi and Cellular Framework

Issue ID: 12397

Fallback feature works on Quectel BG96 module with all the scan sequences except for the CATM1-GSM-NB1 scan sequence.

Applies to: Quectel BG96 on cellular framework

Issue ID: 12841

The BSD socket sendto API was not returning for 150 seconds if the correct response was not received from the BG96 module. The sendto API appeared to have been blocked for 150 seconds and was returning an error only after the timeout.

The BSD sendto API will now return once it gets the expected response for the AT command. Maximum wait time is 150 seconds.

Applies to: UDP transfers using BSD socket BG96 Cellular framework.

Issue ID: 12844

sf_cellular_cat1_connect API was returning success even when the connection was not established. With the fix, sf_cellular_cat1_connect API returns the proper error code when the connection is not established.

Applies to: Nimbelink CAT1 module

Issue ID: 12950

Reconnecting to the cellular network fails after disconnecting from the network using Cellular Framework Disconnect API. This issue has been resolved.

Applies to: Cellular Framework for Quectel CATM1 on NB-IoT

Issue ID: 13262

Cellular interface can now be used as a secondary interface in the NetX/NetX Duo application.

Applies to: NetX Duo application using Cellular Framework on all Synergy platforms.

6.14 sf_comms_telnet

Issue ID: 13261

During a read operation, when using the TX_WAIT_FOREVER timeout, if the Ethernet link goes down, the read API will continue to wait for the data from the read queue. Once the Ethernet link is back up, the read operation resumes and exits. To exit the read operation during a link down event, the user must explicitly abort the read operation by calling the close API in the link status change callback function.

Applies to: S7G2, S5D9, and S5D5 MCU Groups

6.15 sf_el_gx

Issue ID: 13184

The rendering issue for GUIX shapes such as Circle, Arc, Eclipse, and Pie when D/AVE 2D accelerator is enabled in the application is now resolved. This issue was caused due to incorrect configuration of the D/AVE 2D accelerator while rendering these GUIX shapes.

Applies to: S7G2 and S5D9 MCU Groups

6.16 sf_el_tx

Issue ID: 4958

Some stacks allocated in the SSP framework modules and the code generated by the Synergy Configuration Tool were not guaranteed to be aligned to an 8-byte boundary as required by the ARM EABI. This issue is now fixed. This issue would only be encountered if the created thread calls user code that calls a function that uses the stack pointer (such as sprintf) when the end of the stack is not 8-byte aligned.

Applies to: All MCUs

Issue ID: 13658

If Notify Callbacks was enabled in the ThreadX Source configuration, the application would encounter an unrecoverable error in the initialization code. This issue is now fixed.

Applies to: All MCUs

6.17 sf_el_ux

Issue ID: 13037

Earlier, an error message was not prompted in the USB Device Stack Class if an incorrect device class code is selected in the USBX Device configuration for the selected USB Device Stack Class. This issue is now fixed.

Applies to: All MCUs

6.18 sf_external_irq

Issue ID: 13292

The mutex object is not required for the sf_external_irq framework and is therefore removed from the module, and the ThreadX API calls are properly handled.

Applies to: All MCUs

6.19 sf_i2c

Issue ID: 13063

I²C Framework is now thread safe and the user can access a single instance from multiple threads. Redundant variable p_ctrl -> locked is removed and p_ctrl -> restarted flag has been handled in a way that it is thread safe now.

Applies to: All MCUs

Issue ID: 13225

Earlier, when read/write call was invoked with a relatively small timeout, subsequent read/write API returned SSP_ERR_IN_USE resulting in keeping the bus busy.

After adding the event clear and bus reset, sf_i2c does not give any error, and read/write works fine without any unsolicited notifications.

Applies to: All MCUs

6.20 sf_spi

Issue ID: 13052

The function sf_spi_common_start() is updated to release the mutex if the reconfiguration function fails.

The function SF_SPI_Close() is updated to release the mutex if the low level driver close API fails.

The function SF_SPI_Unlock() API is updated to clear the bus locked state after releasing the mutex.

Applies to: All MCUs

6.21 USBX

Issue ID: 10850

ux_host_stack_device_get API was not working when device_index (1st argument) is not 0. This issue is now fixed.

Applies to: All MCUs

7. Known Issues and Limitations in 1.5.2

7.1 BSP for SSP supported Platforms

Issue ID: 12971

The GCC linker does not warn the user if they have exceeded the flash boundary with initialized data.

Applies to: All MCUs when using the GCC

Workaround: None

Issue ID: 13639

Interrupts will not work for ACMPHS channel 4 or 5 on S7G2. If an interrupt is enabled for ACMPHS on channel 4, the comparator interrupt will fire when the ADC1 scan end event occurs. If an interrupt is enabled for ACMPHS on channel 5, the comparator interrupt will fire when the ADC1 scan end group B event occurs.

Applies to: S7G2 MCU Group

Workaround: None

7.2 CTSU

Issue ID: 8731

In case of a hardware issue where the channel capacitance has an invalid value (due to board layout), the CTSU data acquisition fails. The code waits in a loop waiting for the data and does not return.

Applies to: All MCUs

Workaround: Currently there is no software workaround for this issue. The fix is to use the recommended capacitor for TSCAP.

7.3 ISDE User Experience Improvement

Issue ID: 12529

Generating the project content after changing the board in the BSP tab of a project created with a custom board pack deletes the configuration.xml file of the project.

Applies to: All MCUs

Workaround: The board packs used should be created such that they do not include the configuration.xml file.

7.4 NetX

Issue ID: 12951

Users will not be able to use TLS 1.0 for secure connection.

Applies to: S7G2, S5D9, S5D5, and S5D3 MCU Groups

Workaround: None

Issue ID: 13297

Web HTTP Client fails to reconnect with the server after the server has disconnected with the client. It returns error code 0x22, that is, socket is already bound.

Applies to: S7G2, S5D9, and S5D5 MCU Groups

Workaround: While reconnecting with HTTP Server, delete and recreate the Web HTTP Client instance. To delete the instance use nx_web_http_client_delete() and to create use nx_web_http_create() API.

7.5 nxd_mqtt_client

Issue ID: 12395

The API nxd_http_client_put_start() is used to start a PUT operation. It takes as input the username/password. There is an issue when an application is built using optimization -O2 and passes the username/password as NULL to the nxd_http_client_put_start() API. The issue is that, due to optimization, NULL username/password are treated as non-NULL.

Applies to: S7G2 and S5D9 MCU Groups

Workaround: Use optimization level 0 (-O0) if permissible.

Issue ID: 13048

The MQTT client, nxd_mqtt_client_secure_connect(), invokes tls_setup() but never checks for its return value. Even if tls_setup() returns an error, nxd_mqtt_client_secure_connect() continues to execute, which is not desired.

Applies to: S7G2 and S5D9 MCU Groups

Workaround: The application should write tls_setup() such that the APIs invoked in this function print the return value. This way, during development, the errors can be identified by tls_setup() on the terminal.

7.6 nxd_tls_secure

Issue ID: 12940

Applications requiring TLS connection will not be functional when connecting with servers strictly enforcing section 3.4 of RFC 5746.

Applies to: S7 and S5 MCU Series

Workaround: Contact Technical Support/Sales FAE for more information.

7.7 r_dac8

Issue ID: 12261

The DAC8 output pin is not getting configured when it is configured through ISDE.

Applies to: S1JA, S128, and S3A3 MCU Groups

Workaround: Configure the DAC8 output pin manually

7.8 r_riic

Issue ID: 13331

The measured rate of I^{2}C fast mode is 350 kHz, which is less than the specification value of 400 kHz. This will result in the I^{2}C slave device not transferring the data at the maximum speed that it was designed for. The I^{2}C fast mode clock speed of 400 kHz should be as close to the theoretical value as possible.

Applies to: All MCUs

Workaround: None

7.9 sf_cellular

Issue ID: 12257

PPP link goes down when running the Cellular Application with NetX Duo.

Applies to: NimbeLink CAT1 on applicable Synergy MCU Series

Workaround: The application can restart the NetX PPP instance using nx_ppp_restart() from PPP link down notification callback handler that it has registered with the framework.

Issue ID: 12266

While downloading large size data, packets are received at the NetX socket level, but getting those packets using NetX protocols such as HTTP, FTP, and so on, fail, resulting in download failure in the case of NimbeLink CAT1 Modem.

Applies to: Cellular Framework for NimbeLink CAT1 modules on Verizon Network

Workaround: None

7.10 sf_cellular

Issue ID: 13592

While downloading large size data using the BG96 module on NB-IOT network, the packets are received at the NetX socket level, but getting those packets using NetX protocols such as HTTP, FTP, and so forth fails, resulting in download failure.

Applies to: Cellular Framework for Quectel BG96 module on NB-IoT Network

Workaround: None

7.11 sf_el_gx

Issue ID: 13030

The GUIX shapes such as circle, arc, polygon, eclipse, pie, and text (1 bpp and 4 bpp) will not be rendered properly if the D/AVE 2D accelerator is enabled in the application. This happens because of incorrect configuration of the D/AVE 2D accelerator, while rendering these GUIX shapes.

Applies to: S7G2 and S5D9 MCU Groups

Workaround: Disable D/AVE 2D accelerator when the above specified GUIX shapes are used in the application.

7.12 sf_el_ux

Issue ID: 10575

USBX device class does not support the remote wake up feature.

Applies to: All MCUs

Workaround: None

7.13 sf_el_ux

Issue ID: 13185

The device detection interrupt fails to trigger when a USB MSC host application is built with a combination of ThreadX src and the default USBX library, selected in the Synergy stack and the optimization level set to -O0.

Applies to: All Synergy MCUs

Workaround: Either use both ThreadX and USBX sources or use default libraries for both in XML stack configuration.

7.14 sf_spi

Issue ID: 13017

When SF_SPI is using RSPI as a low lever driver with DTC, a failure is sometimes seen when read/write of 1 Mbit is performed in the application.

Applies to: S128 MCU Group

Workaround: The following workarounds can be used:

- Using SCI_SPI instead of RSPI as low level driver with DTC
- Providing a delay after the page program function, as mentioned in the serial flash datasheet
- Page programming 256 bytes at a time, 512 times to write 1 Mb of data, rather than only 64 bytes at a time, 2048 times
- Lowering the clock rate (32 MHz to 24 MHz here)
- Removing DTC and using CPU for the transfer
- Using GCC-O3 (or -O High Speed in IAR) if feasible.

Issue ID: 13587

If any SPI Framework device calls close() API, it will close the low level driver. Once the low level driver is closed, any attempt from other SPI Framework devices to perform read/write operations on the bus will fail. Other devices will not be able to open the lower device if device count is not zero. Hence, further operations on the shared SPI bus will be unsuccessful.

Applies to: All MCUs

Workaround: The user application should not call close() API unless all other devices finish their read/write operations.

Issue ID: 13588

1. The event code values obtained from the low level driver are passed into the tx_event_flags_set() in the wrong manner. These event codes are not mapped to the bits of the event flag group before passing it into the tx_event_flags_set(). As a result, the framework may fail to recognize the right event code passed by the low-level driver.

2. The SF_SPI read/write() API calls sf_spi_common_wait() function internally. The sf_spi_common_wait() function only expects event SPI_EVENT_TRANSFER_COMPLETE. So, in case of failure, the user application will get stuck forever in the read/write() API or may return from the API after some time depending on the provided timeout value. Therefore, the application will miss the occurrence of the other events.

3. The application should clear the synchronization event flags before read/write to avoid false notifications.

Applies to: All MCUs

Workaround: None

Issue ID: 13589

If a user application is using the same SPI framework instance from multiple threads, then thread synchronization issues will arise.

Applies to: All MCUs

Workaround: None

Issue ID: 13591

In SF_SPI Lock() API, there is no wait option provided to the user while obtaining ownership of the SPI bus mutex.

Applies to: All MCUs

Workaround: None

7.15 SSP XMLs for ISDEs

Issue ID: 12857

Creating a project with a custom board pack might not reflect the customized values set for the properties in that custom board pack.

Applies to: All MCUs

Workaround: None

7.16 USBX

Issue ID: 11293

When the MSC and CDC composite classes are used in the same project, if the CDC class does not respond, the MSC class also fails to get the MSC device content.

Applies to: All MCUs

Workaround: None

Issue ID: 11508

The USB Device MSC with DMA on S3A1 cannot copy large files (more than 20 KB files) from the host (PC) to the device (Synergy board).

Applies to: S3A1 MCU Group

Workaround: To copy large files, use the CPU mode instead of the DMA mode in the Synergy configuration tool.

Issue ID: 12531

When the Synergy board is configured as a USB device Mass storage class, the user will not be able to change the USB MSC device storage vendor ID as this is hard coded to "ExpressL".

Applies to: All MCUs

Workaround: None

8. Complete List of Modules Supported in this Release

These modules are available for respective MCUs based on the following criteria:

- If the core functionality of the module has been tested and works on a MCU, even if it has known bugs, then the module is supported on the MCU.
- If the core functionality is broken or not tested on a MCU, then that module is not supported on the MCU.
- If a module has been tested on one of the Synergy MCUs, and it is independent of the underlying MCU hardware or HAL drivers, then the module is supported on all Synergy MCUs on which the underlying driver/framework/stack upon which the module depends on have been completely tested on that MCU.

8.1 BSP and Driver Modules Available in this Release

Module Name	SSP Feature	Supported Synergy MCU Groups
BSP	Board Support Package	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
Driver		
r_acmphs	Analog Comparator High Speed	S1JA
r_acmplp	Analog Comparator Low Power	S1JA
r_adc	A/D Converter	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_agt	Asynchronous General Purpose Timer	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_cac	Clock Frequency Accuracy Measurement Circuit	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_can	Controller Area Network	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_cgc	Clock Generation Circuit	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_crc	Cyclic Redundancy Check Calculator	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_ctsu	Capacitive Touch Sensing Unit	S124, S128, S3A7, S5D5, S5D9, S7G2
r_dac	Digital to Analog Converter	S124, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_dac8	8-bit Digital to Analog Converter	S128, S1JA, S3A3
r_dmac	Direct Memory Access Controller	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_doc	Data Operation Circuit	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_dtc	Data Transfer Controller	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_elc	Event Link Controller	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_flash_hp	Flash Memory, High Performance	S5D3, S5D5, S5D9, S7G2
r_flash_lp	Flash Memory, Low Power	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7

r_fmi	Factory Microcontroller Information	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_glcd	Graphics LCD Controller	S5D9, S7G2
r_gpt	General Purpose Timer	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_gpt_input_capture	General Input Capture	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_icu	Interrupt Controller Unit	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_ioport	General Purpose I/O Ports	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_iwdt	Independent Watchdog Timer	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_jpeg_common	JPEG Common	S5D9, S7G2
r_jpeg_decode	JPEG Decode	S5D9, S7G2
r_jpeg_encode	JPEG Encode	S5D9, S7G2
r_kint	Keyboard Interrupt Interface	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_lpm†	Low Power Mode	S124, S3A7, S7G2
r_lpmv2_s1ja	Low Power Mode V2 for S1JA	S1JA
r_lpmv2_s124	Low Power Mode V2 for S124	S124
r_lpmv2_s128	Low Power Mode V2 for S128	S128
r_lpmv2_s3a1	Low Power Mode V2 for S3A1	S3A1
r_lpmv2_s3a3	Low Power Mode V2 for S3A3	S3A3
r_lpmv2_s3a6	Low Power Mode V2 for S3A6	S3A6
r_lpmv2_s3a7	Low Power Mode V2 for S3A7	S3A7
r_lpmv2_s5d3	Low Power Mode V2 for S5D3	S5D3
r_lpmv2_s5d5	Low Power Mode V2 for S5D5	S5D5
r_lpmv2_s5d9	Low Power Mode V2 for S5D9	S5D9
r_lpmv2_s7g2	Low Power Mode V2 for S7G2	S7G2
r_lvd	Low Voltage Detection Driver	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_opamp	Operational Amplifier	S1JA
r_pdc	Parallel Data Capture Unit	S5D5, S7G2
r_qspi	Quad Serial Peripheral Interface	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
r_riic	IIC	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2

r_riic_slave	IIC Slave	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_rspi	Serial Peripheral Interface	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_rtc	Real-time Clock	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_sci_i2c	Serial Communication Interface I2C	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_sci_spi	Serial Communication Interface SPI	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_sci_uart	Serial Communication Interface UART	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_sdadc	Sigma Delta ADC	S1JA
r_sdmmc	SDHI Driver for SDIO and SD/MMC Memory Devices	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
r_slcdc	Segment LCD Controller	S3A1, S3A3, S3A6, S3A7
r_ssi	(Inter-IC Sound) Interface [old: Serial Sound Interface] or r_i2s	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_wdt	Watchdog Timer	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
r_sce#	Cryptographic Library (HAL interfaces)	See table note on Cryptographic Functions

Cryptographic Functions: Section 8.4 lists cryptographic functions available for each MCU in this release; these functions are accessible as part of r_sce/cryptographic library.

8.2 Framework Modules Supported in this Release

Module Name	SSP Feature	Supported Synergy MCU Groups
sf_adc_periodic	Periodic Sampling ADC	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_audio_playback	Audio Playback	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_audio_playback_hw_dac	Audio Playback HW DAC	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_audio_playback_hw_i2s	Audio Playback HW I2S	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_audio_record_adc	Audio Record ADC	S124, S128, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_audio_record_i2s	Audio Record I2S	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_ble_rl78g1d	BLE Framework	S128, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2, S3A1, S124
sf_ble_rl78g1d_onboard_profile	BLE Framework Onboard Profiles	S124, S128, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2, S3A1
sf_block_media_lx_nor	Block Media Interface for LevelX NOR	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_block_media_qspi	Block Media Interface for QSPI	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2

sf_block_media_ram	Block Media Interface for RAM	S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_block_media_sdmmc	Block Media Interface for SD Multi Media Card	S3A3, S3A7, S5D3, S5D9, S7G2, S3A1, S5D5
sf_comms_telnet	Telnet Communications	S5D3, S5D5, S5D9, S7G2
sf_console	Console	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_el_fx	Synergy FileX interface	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_el_gx	Synergy GUIX Interface	S7G2, S5D9
sf_el_lx_nor	Synergy LevelX NOR Interface	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_el_nx	Synergy NetX Interface	S5D5, S5D9, S7G2
sf_el_nx_comms	Synergy NetX Communication Interface	S5D5, S5D9, S7G2
sf_el_ux	Synergy USBX Interface	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D5, S5D9, S5D3, S7G2
sf_el_ux_comms†	Synergy USBX Communication Interface	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D5, S5D9, S7G2
sf_el_ux_comms_v2	Synergy USBX Communication Interface V2	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D5, S5D9, S5D3, S7G2
sf_external_irq	External Interrupt	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_i2c	I2C Framework	S124, S128, S3A3, S3A6, S3A7, S5D3, S5D5, S7G2
sf_jpeg_decode	JPEG Decode	S5D9, S7G2
sf_memory_qspi_nor	Memory QSPI NOR	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_message	Inter-Thread Messaging	S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_power_profiles†	Power Mode Profile	S124, S3A7, S7G2
sf_power_profiles_v2	Power Mode Profile V2	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_spi	SPI Framework	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_tes_2d_drw	2D Drawing Engine Framework	S5D9, S7G2
sf_thread_monitor	Thread Monitor (Watchdog)	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_touch_ctsu	Capacitive Touch Sensing Unit	S124, S128, S3A3, S3A7, S5D9, S7G2
sf_touch_ctsu_button	Capacitive Touch Sensing Unit Button	S124, S128, S3A3, S3A7, S5D9, S7G2
sf_touch_ctsu_slider	Capacitive Touch Sensing Unit Slider	S124, S128, S3A3, S3A7, S5D9, S7G2
sf_touch_panel_i2c	Touch Panel I^{2}C	S5D9, S7G2
sf_touch_panel_v2	Touch Panel Version 2	S5D9, S7G2
sf_uart_comms	UART Framework	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2

sf_wifi_gt202	WiFi Framework	S124, S128, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_wifi_gt202_onchip	WiFi framework on Chip Stack	S124 (GCC), S128, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_cellular_catm1	Cellular Framework Quectel BG96 CATM1 & NB-IOT	S5D9, S7G2
sf_cellular_catm1_socket	Cellular Framework Quectel BG96 CATM1 & NB-IOT On Chip Stack	S5D9, S7G2
sf_cellular_cat1	Cellular Framework Nimbelink CAT1	S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_cellular_cat1_socket	Cellular Framework Nimbelink CAT1 Socket	S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_cellular_cat3	Cellular Framework Nimbelink CAT3	S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
sf_cellular_cat3_socket	Cellular Framework Nimbelink CAT3 Socket	S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_crypto[#], [##]	Cryptographic Framework	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
sf_el_nx_crypto	Cryptpgraphic Framework-Shim layer	S7G2, S5D9, S5D5, S5D3

[#]   **Cryptographic Functions**: Section 8.4 lists cryptographic functions available for each MCU in this release; these functions are accessible as part of r_sce/cryptographic library.

[##] Framework Interfaces for Cryptographic Functions (sf_crypto) available for this release include: HASH, TRNG, and Key Generation (RSA and AES).

[†]   Indicates a module that is deprecated starting with SSP v1.3.0 and all subsequent versions. Deprecated modules will only be available to maintain compatibility with existing projects that may be using them. It is highly recommended that new projects use the recommended replacements and not use deprecated modules. For details, see the SSP User's Manual.

8.3   Third-Party Modules Supported in this Release

Module Name	SSP Feature	Supported Synergy MCU Groups
fx	FileX	S124, S3A3, S3A6, S3A7, S5D9, S7G2
gx	GUIX	S5D9, S7G2
nx	NetX	S3A7, S3A3, S3A1, S5D3, S5D5, S5D9, S7G2
nx_auto_ip	NetX Auto IP	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_bsd	NetX BSD	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_dhcp_client	NetX DHCP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_dhcp_server	NetX DHCP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_dns_client	NetX DNS Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_ftp_client	NetX FTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_ftp_server	NetX FTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2

nx_http_client	NetX HTTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_http_server	NetX HTTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_pop3	NetX POP3	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_ppp	NetX PPP	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2*
nx_smtp_client	NetX SMTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_snmp	NetX SNMP Agent	S5D3*, S5D5*, S5D9*, S7G2
nx_sntp_client	NetX SNTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_telnet_client	NetX Telnet Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_telnet_server	NetX Telnet Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_tftp_client	NetX TFTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nx_tftp_server	NetX TFTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
Nxd	NetX Duo Stack	S3A7, S3A3, S3A1, S5D3, S5D5, S5D9, S7G2
nxd_auto_ip	NetX Duo Auto IP	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_bsd	NetX Duo BSD	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_dhcp	NetX Duo DHCP IPv4 Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_dhcp	NetX Duo DHCP IPv6 Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_dhcp_server	NetX Duo DHCP IPv4 Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_dhcp_server	NetX Duo DHCP IPv6 Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_dns	NetX Duo DNS Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_ftp_client	NetX Duo FTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_ftp_server	NetX Duo FTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_http_client	NetX Duo HTTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_http_server	NetX Duo HTTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_nat	NetX Duo NAT	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_pop3	NetX Duo POP3	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_ppp	NetX Duo PPP	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2*

nxd_smtp_client	NetX Duo SMTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_snmp	NetX Duo SNMP Agent	S5D3*, S5D5*, S5D9*, S7G2
nxd_sntp_client	NetX Duo SNTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_telnet_client	NetX Duo Telnet Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_telnet_server	NetX Duo Telnet Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_tftp_client	NetX Duo TFTP Client	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_tftp_server	NetX Duo TFTP Server	S3A7*, S3A3*, S3A1*, S5D3*, S5D5*, S5D9*, S7G2
nxd_mqtt_client	NetX Duo MQTT Client	S5D3, S5D5, S5D9, S7G2
nxd_tls_secure	NetX Duo TLS Secure	S5D3, S5D5, S5D9, S7G2
nxd_web_http_client	NetX Duo Web HTTP1.1 Client	S5D5*, S5D9, S7G2
	NetX Duo Web HTTPS Client	S5D5, S5D9, S7G2
Tx	ThreadX	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D3, S5D5, S5D9, S7G2
Lx_nor	LevelX NOR	S3A1, S3A3, S3A7, S5D3, S5D5, S5D9, S7G2
ux_device_class_storage	USBX Device Class Mass Storage	S124, S128, S1JA, S3A1, S3A3, S3A6, S3A7, S5D9, S7G2, S5D3, S5D5
ux_device_class_hid	USBX Device Class HID	S124, S128, S3A3, S3A6, S3A7, S5D9, S7G2, S5D3, S5D5, S3A1, S1JA
ux_device_class_cdc_acm	USBX Device Class CDC-ACM	S124, S128, S3A3, S3A6, S3A7, S5D9, S7G2, S5D3, S5D5, S3A1, S1JA
ux_host_class_cdc_acm	USBX Host Class CDC-ACM	S3A3, S3A7, S5D9, S7G2, S5D3, S5D5, S3A1
ux_host_class_hid	USBX Host Class HID	S3A3, S3A7, S5D9, S7G2, S5D3, S5D5, S3A1
ux_host_class_hub	USBX Host HUB	S5D9, S7G2, S5D3, S5D5
ux_host_class_storage	USBX Host Class Mass Storage	S3A1, S5D3, S5D5, S3A3, S3A7, S5D9, S7G2
ux_host_class_video	USBX Host Video class	S5D9, S7G2

* NetX and NetX Duo Applications are MCU-independent application layer protocols dependent on the NetX and Ethernet drivers. All MCUs on which NetX has been tested and verified support these protocols.

8.4 Cryptographic Functions for Each MCU Supported in this Release

Function	S7G2, S5D9, S5D5, S5D3	S3A1, S3A3, S3A7, S3A6	S1JA, S124, S128
TRNG	Generate and read random number	Generate and read random number	Generate and read random number
AES	Encryption, decryption, Key Generation - wrapped keys	Encryption, decryption, Key Generation - wrapped keys	Encryption, decryption
AES Key Size	128-bit, 192-bit, 256-bit	128-bit, 256-bit	128-bit, 256-bit
AES Key Type	Plain text / raw key, Wrapped key	Plain text / raw key, wrapped key	Plain text / raw key

Function	S7G2, S5D9, S5D5, S5D3	S3A1, S3A3, S3A7, S3A6	S1JA, S124, S128
AES Chaining Modes	ECB, CBC, CTR, GCM, XTS ††	ECB, CBC, CTR, GCM, XTS	ECB, CBC, CTR
ARC4	Encryption, decryption	NA	NA
TDES	Encryption, decryption	NA	NA
TDES Key Size	192-bit	NA	NA
TDES Chaining Modes	ECB, CBC, CTR	NA	NA
RSA	Signature Generation, Signature Verification, Public-key Encryption, Private-key Decryption, Key Generation - plain text and wrapped keys	NA	NA
RSA Key Size	1024-bit, 2048-bit	NA	NA
RSA Key Type	Plain text / raw key, Wrapped key	NA	NA
Key Installation	AES, ECC, RSA keys	AES keys	NA
ECC	Key Generation, Scalar Multiplication, ECDSA – Signature Generation, ECDSA – Signature Verification, (see usage notes for plain text key preparation)	NA	NA
ECC Key Size (in bits)	192, 224, 256, and 384	NA	NA
ECC Key Type	Plain text/ raw keys and wrapped keys	NA	NA
DSA	Signature Generation, Signature Verification	NA	NA
DSA Key Size	(1024, 160)-bit, (2048, 224)-bit, (2048, 256)-bit	NA	NA
HASH	SHA1, SHA224, SHA256, MD5	NA	NA

†† XTS is supported for 128-bit and 256-bit keys only.

8.5 Experimental Modules Supported in this Release

Modules that have not been tested on the MCUs have been classified as experimental modules and are listed in the following table. These experimental modules are currently not supported by Synergy Configuration tools and use of these modules in customer projects is not supported by Renesas at this time.

Experimental Modules		
Module Name	**SSP Feature**	**Supported Synergy MCU Groups**
ux_device_class_cdc_ecm	USBX Device Class CDC-ECM	S124, S3A3, S3A7, S5D9, S7G2
ux_device_class_rndis	USBX Device Class RNDIS	S124, S3A3, S3A7, S5D9, S7G2
ux_host_class_gser	USBX Host Class Generic Serial	S3A3, S3A7, S5D9, S7G2
ux_host_class_printer	USBX Host Class Printer	S3A3, S3A7, S5D9, S7G2
ux_host_class_prolific	USBX Host Class Prolific	S3A3, S3A7, S5D9, S7G2
ux_host_class_swar	USBX Host Class Swar	S3A3, S3A7, S5D9, S7G22
ux_network_driver	USBX Network Driver	S124, S3A3, S3A7, S5D9, S7G2
nxd_web_http_server	NetX Duo Web HTTP Server	S5D9, S7G2

9. Additional Technical Notes

- Subscribe to the Synergy Technical Bulletin Board to receive the latest technical news and notifications about new features, known issues, workarounds, and release announcements. To subscribe, visit http://renesasrulz.com/synergy/synergy_tech_notes/f/214.aspx. Sign in to Renesas Rulz, and press **Email Subscribe to this forum**.
- Additional technical information, including informative papers and articles on SSP and Synergy can be found at Synergy Knowledge Base: www.renesassynergy.com/knowledgebase

Website and Support

Visit the following vanity URLs to learn about key elements of the Synergy Platform, download components and related documentation, and get support.

Synergy Software	renesassynergy.com/software
Synergy Software Package	renesassynergy.com/ssp
Software add-ons	renesassynergy.com/addons
Software glossary	renesassynergy.com/softwareglossary
Development tools	renesassynergy.com/tools
Synergy Hardware	renesassynergy.com/hardware
Microcontrollers	renesassynergy.com/mcus
MCU glossary	renesassynergy.com/mcuglossary
Parametric search	renesassynergy.com/parametric
Kits	renesassynergy.com/kits
Synergy Solutions Gallery	renesassynergy.com/solutionsgallery
Partner projects	renesassynergy.com/partnerprojects
Application projects	renesassynergy.com/applicationprojects
Self-service support resources:	
Documentation	renesassynergy.com/docs
Knowledgebase	renesassynergy.com/knowledgebase
Forums	renesassynergy.com/forum
Training	renesassynergy.com/training
Videos	renesassynergy.com/videos
Chat and web ticket	renesassynergy.com/support

Revision History

		Description	
Rev.	Date	Page	Summary
1.00	Nov 16, 2018	-	Initial release

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Renesas Synergy™ Platform
SSP v1.5.2 Release Note

Renesas Electronics Corporation