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| REVISION HISTORY | Linux Interface Specification Device Driver DMA Engine  User’s Manual: Software |

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| Rev. | Date | Description | |
| Page | Summary |
| 0.1 | Nov. 20, 2015 | ⎯ | New creation. |
| 0.2 | Apr. 15, 2016 | All | Add R-Car M3 support. |
|  |  | 2 | Table 1.2 Related documents (R-Car H3/M3)  Update related documents. |
|  |  | 33 | Figure 5.2 Kernel configuration (R-Car H3/M3)  Update Kernel configuration menu. |
|  |  | 34 | 5.3 Device Tree Setting  Add R-Car M3 Device tree file(r8a7796.dtsi). |
| 0.3 | Aug. 5, 2016 | 2 | Table 1.2 Related documents (R-Car H3/M3)  Update related documents. |
|  |  | 4 | Table 3.1 Hardware specification (R-Car H3/M3)  Add R-CarM3-Sip System Evaluation Board |
|  |  | 16 | Table 4.2 DMA device interface function (R-Car H3/M3)  Add device interface function “device\_prep\_dma\_imm\_data” and “device\_synchronize”. |
|  |  | 24,25 | Figure 4.7, 4.8 struct dma\_device (R-Car H3/M3)  Add device interface function “device\_prep\_dma\_imm\_data” and “device\_synchronize”. |
|  |  | 34,35 | Figure 5.3, 5.4 Device tree initial references information  Update clocks and power-domains. Add iommus. |
| 0.4 | Dec. 16, 2016 | 24,25 | Figure 4.7, 4.8 struct dma\_device (R-Car H3/M3)  Add members “struct dma\_filter”, “max\_burst”, “descriptor\_reuse”. |
|  |  | 26 | 4.4.2.4 dma\_async\_tx\_descriptor  Add members “desc\_free”, “callback\_result”. |
|  |  | 27 | 4.4.2.10 dma\_slave\_config  Change variable type of “src\_addr” and “dst\_addr”. |
|  |  | 34 | 5.3 Device Tree Setting  Update description in device tree. |
| 0.5 | Mar. 15, 2017 | 2 | 1.4.2 Related Documents  Update related documents. |
|  |  | 4 | 3.1 Hardware Environment  Add R-CarH3-SiP/M3-SiP System Evaluation Board Salvator-XS. |
| 0.6 | Jun. 14, 2017 | 2 | 1.4.2 Related Documents  Update related documents (Refer Rev 0.54). |
| 1.00 | Aug. 8, 2017 | All | Update document format. |

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| 1.01 | Oct. 24, 2017 | All | Add R-Car M3N support. |
|  |  | 1 | 1.3 Function  Update description about descriptor transfer. |
|  |  | 5 | 3.2 Module Configuration  Remove SDHI device.  Add I2C device. |
|  |  | 7 | Table 4.1 External function  Add function “dma\_request\_chan”. |
|  |  | 8 | 4.2.2 dma\_request\_chan  Add this chapter. |
|  |  | 17 | Table 4.2 DMA device interface function  Change to use the device\_prep\_dma\_cyclic interface function and the device\_synchronize interface function. |
|  |  | 20 | 4.3.5 device\_prep\_dma\_cyclic  Add this chapter. |
|  |  | 22 | 4.3.8 device\_synchronize  Add this chapter. |
|  |  | 24 | 4.4.1 This module structure  Remove unused structures. Those are shdma\_slave, shdma\_desc, shdma\_chan, shdma\_ops and shdma\_dev. |
|  |  | 24-33 | 4.4.1 This module structure  Add structure description defined in rcar-dmac.c and usb-dmac.c. Those are rcar\_dmac\_transfer\_chunk, rcar\_dmac\_hw\_desc, rcar\_dmac\_desc\_page, rcar\_dmac\_chan\_slave, rcar\_dmac\_chan\_map, rcar\_dmac\_chan, rcar\_dmac, usb\_dmac\_sg, usb\_dmac\_desc, usb\_dmac\_chan, and usb\_dmac. |
|  |  | 34 | Table 4.4 DMA transaction type  Change "DMA\_MEMCPY" transaction type to support. |
|  |  | 36 | 4.6.1 DMA property  Add a description of the properties described in the device tree file. |
|  |  | 39 | 5.2 Integration Procedure  Remove unused file. Those are shdma-base.h, shdma\_base.c, and shdma-of.c. |
|  |  | 40 | 5.3 Device Tree Setting  Add R-Car M3N Device tree file (r8a77965.dtsi). |
| 1.50 | Jan. 29, 2018 | All | Support to kernel version v4.14. |
|  |  | 2 | 1.4.2 Related Documents  Update related documents (Refer Rev 0.80). |
|  |  | 7 | Table 4.1 External function  Add function “dma\_request\_chan\_by\_mask”, “dma\_request\_slave\_channel”, and “dma\_submit\_error”. |
|  |  | 8 | 4.2.1 dma\_request\_channel  Add a description about the status of the argument mask. |
|  |  | 10 | 4.2.3 dma\_request\_chan\_by\_mask  Add this chapter. |
|  |  | 11 | 4.2.4 dma\_request\_slave\_channel  Add this chapter. |
|  |  | 15 | 4.2.12 dma\_submit\_error  Add this chapter. |
|  |  | 20 | Table 4.2 DMA device interface function  Remove device\_prep\_dma\_sg() function I/F, and removes the function description chapter. |
|  |  | 33 | 4.4.2.2 dma\_device  Remove device\_prep\_dma\_sg() function I/F. |
|  |  | 37 | Table 4.4 DMA transaction type  Change "DMA\_PRIVATE" and “DMA\_ASYNC\_TX” transaction type to support. |
|  |  | 38 | Table 4.5 List of DMA control flag  Add DMA\_PREP\_CMD control. |
|  |  | 43 | Figure 5.3 Device tree initial references information of Audio-DMAC0  Add resets parameter. |
|  |  | 44 | Figure 5.4 Device tree initial references information of Audio-DMAC1  Add resets parameter. |
| 1.51 | Mar. 28, 2018 | All | Add R-Car E3 Support |
|  |  | 1 | Add Table 1.1 Support DMAC (R-Car E3)  1.3 Function  - Modified sentence for Table 1.2 |
|  |  | 2 | Table 1.2 Related Documents  - Add R-Car E3 System Evaluation Board Ebisu Manual: Hardware Rev.0.01 |
|  |  | 4 | Table 3.1 Hardware Specification  - Add R-Car E3 System Evaluation Board Ebisu |
|  |  | 44 | Figure 5.3 Device tree initial references information of Audio-DMAC0  - Modified foot note for R-Car E3 |
|  |  | 46 | Add Figure 5.5 Device tree initial references information of SYS-DMAC0 (R-Car E3) |
|  |  | 47 | Add Figure 5.6 Device tree initial references information of SYS-DMAC1 (R-Car E3) |
|  |  | 48 | Add Figure 5.7 Device tree initial references information of SYS-DMAC2 (R-Car E3) |
|  |  | 49 | Add Figure 5.8 Device tree initial references information of USB-DMAC (R-Car E3) |
| 1.52 | Sep. 26, 2018 | 2 | 1.4.2 Related Documents  Update related documents (Refer Rev 1.00). |
|  |  | 46-48 | Update Figure 5.5, 5.6, 5.7  Remove common error interrupt (change to error interrupt of each channel). |
| 2.00 | Dec. 25, 2018 | - | - Update AddressList |
|  |  | 2 | - 1.4.2 Related Documents  Update related documents.  Board Salvator-XS: Refer Rev 2.04.  Board Ebisu: Update Date.  Board Eibsu-4D: Add related document. |
|  |  | 4 | - 3.1 Hardware Environment  Add M3N-SiP System Evaluation Board Salvator-XS.  Add R-CarE3 System Evaluation Board Ebisu-4D. |
|  |  | 46-48 | Update Figure 5.5, 5.6, 5.7  Update common error interrupt. It must be described as a resource. |
| 2.01 | Apr. 17, 2019 | - | - Update AddressList |
|  |  | 2 | - 1.4.2 Related Documents  Update related documents (R-Car Series, 3rd Generation User’s Manual: Refer Rev 1.50). |
| 2.50 | Apr. 24, 2020 | All | - Add R-Car V3U support |
| 1 | - Add support status table 1.1, 1.2, 1.3, 1.4, 1,5 |
|  |  | 3 | - Update figure 3.1  Add RT-DMAC support |
| 2.51 | Jun. 24, 2020 | 53-54 | - Update device tree initial references information for R-Car V3U |
| 2.52 | Jul. 31, 2020 | 2, 3, 60 | - Add fixed address mode, and slow speed mode support |
| 2.53 | Dec. 1, 2020 | 4 | - Update related documents of R-Car V3U |
| 60 | - Update fixed source/destination address properties |
| 2.54 | Jan. 29, 2021 | All | - Add R-Car V3H support |
| 2.55 | Apr. 21, 2021 | All | - Add R-Car D3 support |
| 1 | - Correct the number of USB-DMAC channels on R-Car H3 |
| 3.00 | Dec. 10, 2021 | - | - Add Kernel v5.10.41 support |
| 3.1.0 | Dec. 25, 2023 | - | - Add Kernel v5.19.194 support for H3, M3, M3N, E3 |