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

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| Rev. | Date | Description | |
| Page | Summary |
| 0.1 | Sep. 25, 2015 | - | New creation. |
| 0.2 | Oct. 23, 2015 | 23 | 4.1 External Interface for DRM/KMS Driver  Update the version of libdrm from 2.4.59 to 2.4.65. |
| 0.3 | Nov. 20, 2015 | 4 | 1.5 Notice  Add notice of hang-up workaround when VSP underrun occurs |
|  |  | 20 | 5.2 Integration Procedure  Add Renesas VSP1 underrun debug messages configuration |
|  |  | 20 | 5.2.2 Size of CMA Change  Delete CMA change method of bootargs and described the referenced document |
| 0.4 | Mar. 18, 2016 | 2 | Table 1.1 Supported resolution  High resolution (1080p, 720p, etc.,) of Analog RGB is supported. |
|  |  | 4 | 1.4 Restrictions  Delete the description of the resolution that are not supported with the Analog RGB. |
|  |  | 4 | 1.4 Restrictions  Add restriction of Vmute function |
|  |  | 5 | 1.5 Notice  Add the information in the chip revision about work-around. |
|  |  | 6 | Table 2.1 Terminology  Add Terminology of 5P49V5923A |
|  |  | 7 | Figure 3.1 Module configuration (R-Car H3)  Add VSP2 module and 5P49V5923A (programmable clock generator) module. |
|  |  | 13 | 4.1.7 Add Resolution Setting  Fix Analog RGB resolution change function |
|  |  | 15 | Add 4.1.9 Vmute function (DRM) |
|  |  | 19 | 5.1 Directory Configuration  Add clk-5p49v5923a.c and rcar\_du\_drm.h |
|  |  | 21 | 5.2.1 Kernel Configuration  Add “Clock driver for 5P49V5923A programmable clock generator” configuration |
|  |  | 22 | 5.2.3 Kernel Parameters  Add 1080p setting example method of Analog RGB by bootargs. |
| 0.5 | Apr. 15, 2016 | All | Add R-Car M3 support. |
|  |  | 4 | 1.4 Restrictions  Delete the restriction of vmute function. |
| 0.6 | Aug. 5, 2016 | 1,3 | 1.2 Function, Table 1.2 Supported pixel format  New pixel format support (YUV420,YVU420,YUV422,YVU422,YUV444,YVU444) |
|  |  | 1,16 | 1.2 Function, 4.1.5 Setting of plane property  The same use of pixel alpha and plane alpha is supported.(ARGB4444, BGRA8888, ARGB8888) |
|  |  | 2,8 | 1.2.1 Display Resolution, 1.7 P/I conversion  Interlaced mode is supported. |
|  |  | 1,20 | 1.2 Function, 4.1.10 Write back function (DRM)  Write back is supported. |
|  |  | 1,16 | 1.2 Function, 4.1.5 Setting of plane property  Plane order is supported. |
|  |  | 5 | 1.5 Notice  Add note of caution in interlaced mode |
|  |  | 5,10 | Table 1.4, Table 3.1  Add M3 System Evaluation Board information |
|  |  | 14 | 4.1 External Interface for DRM/KMS Driver  Update the version of libdrm from 2.4.65 to 2.4.68. |
|  |  | 21 | Table 4.4 List of DRM resources ID  Each object ID is corrected by update of kernel v4.6 |
|  |  | 24 | Add 4.5 IPMMU Setting |
|  |  | 27 | Figure 5.1 Add rcar-fcp.c source file |
|  |  | 28 | Figure 5.2 Kernel configuration  Add “Renesas Frame Compression Processor” configuration |
|  |  | 29 | 5.2.3 Kernel Parameters  Add 1080i setting method in HDMI connector |
| 0.7 | Dec. 16, 2016 | 22 | Fix 4.2 DRM resource information by updating to kernel-v4.9 |
|  |  | 29 | Fix 5.1 Directory Configuration |
|  |  | 31 | Fix 5.2.1 Kernel Configuration by updating to kernel-v4.9 |
|  |  | 32 | 5.2.3 Kernel Parameters  Add calculation method in Notes |
| 0.8 | Mar. 15, 2017 | 2 | Table 1.1 Supported resolution  Add notice \*6 when R-Car H3 (WS2.0) |
|  |  | 5 | Table 1.4 Related document (R-Car H3 / M3)  Update revision of H/W manual, and add Salvator-XS manual |
|  |  | 7 | Add Figure 1.2 accesses of layers (R-Car H3 (WS2.0)) |
|  |  | 22 | Table 4.4 List of DRM resources ID  Add specification of H3(WS2.0) |
|  |  | 23 | Add 4.4 BRS number setting |
|  |  | 29 | 5.1 Directory Configuration  Change file name 5p49v5923a to 5p49x for Salvator-XS board support |
|  |  | 32 | Figure 5.2 Kernel configuration  Change configuration name 5P49V5923A to 5P49X for Salvator-XS board support |
|  |  | 18, 32 | 4.1.6 Resolution Change, 5.2.3. Kernel Parameters  Add reference document to change the resolution when starting Wayland |
| 0.9 | Apr. 14, 2017 | 25 | 4.6 IPMMU Setting  Add setting of ipmmu\_vi1 and fcpvd2 for R-Car H3 (WS2.0) |
| 0.10 | Jun. 14, 2017 | - | Fix H/W revision notation from WS to Ver. |
|  |  | 5 | Table 1.4 Related document (R-Car H3 / M3)  Update revision of H/W manual |
|  |  | 5 | 1.5 Notice  Add notice of drmModePageFlip API issue timing |
| 1.00 | Aug. 8, 2017 | All | Update document format. |
|  |  | 2 | Table 1.1 Supported resolution  1080p is not supported in Analog RGB resolution because it does not meet the electrical characteristics |
|  |  | 5 | 1.5 Notice  Delete notice of drmModePageFlip API issue timing |
|  |  | 21 | 4.1.10 Write back function (DRM)  Add notice when other display update was executed. |
| 1.01 | Oct. 24, 2017 | ALL | Add R-Car M3N support |
|  |  | 5 | Table 1.4 Related document (R-Car H3 / M3 / M3N)  Update revision of H/W manual |
| 1.50 | Jan. 29, 2018 | - | Update for Kernel v4.14 |
|  |  | 18 | Add color key function support |
|  |  | 19 | Table 4.2  Add atomic API |
|  |  | 21 | Table 4.1  Delete device file of /dev/dri/controlID64 from v4.14 |
|  |  | 25 | Delete IPMMU setting. |
| 1.51 | Mar. 28, 2018 | ALL | Add R-Car E3 support |
|  |  | 18 | Add Linux GPU Driver Developer’s Guide URL |
|  |  | 19 | Table 4.2  Update atomic API |
| 1.52 | Apr. 25, 2018 | 2 | Table 1.2  Add 1920x720 resolution for R-Car E3 |
|  |  | 29 | 4.3 DRM connector selection  Fix dual-link mode from lvds to hdmi in Ex 2) |
|  |  | 32 | Add 4.5 BRS number setting |
|  |  | 35 | 5.2.1 Kernel Configuration  Delete note of Dumb VGA DAC Bridge support because it is wrong. |
| 1.53 | Jun. 27, 2018 | 7 | 1.6 Plane access  Add description of BRS and WPF1 |
|  |  | 23 | 4.1.5 Setting of plane property  Add notice of colorkey alpha use |
|  |  | 24 | 4.1.7　Add Resolution Setting  Add method to add resolution table |
|  |  | 30 | 4.3 DRM connector selection  Fix lvds port number in Ex 3） |
| 1.54 | Oct, 22, 2018 | 2 | Table 1.1  Add M3N notation |
|  |  | 6 | Table 1.6 Related document (R-Car H3 / M3 / M3N / E3)  Update Related Documents |
| 1.55 | Oct, 29, 2018 | 6 | 1.5 Notice  Add notice about sync signal of DU1 in E3 |
|  |  | 16 | Figure 3-2  Add notice about LVDS in E3 |
|  |  | 28 | Table 4.4 List of DRM resources ID  Update Connectors ID of E3 for kernel version up |
|  |  | 29 | 4.3 DRM connector selection  Update for kernel version up |
|  |  | 35 | 5.1 Directory Configuration  Update for kernel version up |
|  |  | 37 | 5.2.1 Kernel Configuration  Modified by kernel version  Add Thine THC63LVD1024 LVDS decoder bridge configuration  Delete R-Car DU VSP Compositor Support so it is set y by default |
|  |  | 37 | 5.2.3 Kernel Parameters  Fix bootargs example setting from 1080p to 1080i in case of VGA. (Because 1080p in VGA cannot be used.) |
| 2.00 | Dec. 25, 2018 | - | Update AddressList |
|  |  | 6 | Table 1.6 Related document  Update reference documents |
|  |  | 14 | Table 3.1 Hardware specification  Update board name |
|  |  | 31 | 4.3 DRM connector selection  Add Ex 4) for ebisu board |
|  |  | 38 | 5.2.3 Kernel Parameters  Add notice of 1080i setting |
| 2.01 | Apr. 17, 2019 | - | Update AddressList |
|  |  | 6 | Table 1.6 Related document (R-Car H3 / M3 / M3N / E3)  Update reference documents |
|  |  | 25,30, 31 | 4.1.7 Add Resolution Setting, 4.3 DRM connector selection  Add description of r8a77990-es10-ebisu.dts |
|  |  | 25 | 4.1.7 Add Resolution Setting [LVDS output]  Add description polarity setting in LVDS panel |
| 2.50 | Apr. 24, 2020 | - | Add R-Car V3U support |
|  |  | 1 | 1.2 Function  Add new supported pixel format for V3U |
|  |  | 2 | 1.2 Function  Add DSI/CSI-2-TX-IF for V3U |
|  |  | 3 | Table 1.3 Supported resolution  Add new supported resolution table with DSI/CSI-2-TX connection for V3U |
|  |  | 4 | Table 1.4 Supported pixel format  Update new pixel formats |
|  |  | 5 | Table 1.7 Supported connector  Add new supported connector table for V3U |
|  |  | 6 | Table 1.8 Related document  Update document |
|  |  | 11 | Figure 1-5 Accesses of layer  Add Layer Access diagram for V3U |
|  |  | 15 | Table 3.1 Hardware specification  Update document |
|  |  | 18 | Figure 3-3 Module configuration  Add new image for V3U’s module configuration |
|  |  | 29 | Table 4-4 List of DRM resources ID  Update connector ID and CRTCs ID for V3U |
|  |  | 40 | 5.2.3 Kernel Parameters  Add example command to set bootargs for V3U |
| 2.51 | Jun. 24, 2020 | 32 | 4.3 DRM connector selection  In Example 3 LVDSx2 Single link, setting for dts in case of using 2 LVDS panels is added |
|  |  | 33 | 4.3 DRM connector selection  In Example 4 Analog RGB + LVDS Single link, setting for dts in case of using Analog RGB and LVDS is added |
|  |  | 36 | 5.1 Directory Configuration  Add DSI driver file into directory configuration |
| 2.52 | Dec. 1, 2020 | 5 | 1.2.3 Connector  Change the name of output signal for DSI-TX-IF at Table 1.7 Supported connector for R-Car V3U |
|  |  | 6 | 1.3 Related Document  Add edition and issed date for [R-Car V3U Series User's Manual] and [ R-CarV3U System Evaluation Board Falcon Hardware Manual] |
|  |  | 11 | 1.6 Plane access  Due to supporting only DU0 on V3U Falcon Board, the access of layers (Figure 1-5) was modified. |
|  |  | 29 | 4.2 DRM resource information  Add R-Car V3U resource ID (connector’s and crtc’s ID) to Table 4.4 List of DRM resources ID |
|  |  | 34 | 4.4 Hot plug Operation  Add checking status of DP cabble |
|  |  | 36 | 5.1 Directory Configuration  Add tn-sn65dsi86.c file as bridge source file to directory sources tree |
| 2.53 | Jan. 29, 2020 | - | Add R-Car V3H v2.0 support. |
| 2.54 | Apr. 21, 2021 | - | Add R-Car D3 support |
|  |  | - | Add Kernel 5.10 support |
| 2.55 | Aug. 16, 2021 | 22 | Update libdrm v2.4.104 |
| 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 |