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# GStreamer

Release Note: Software

## R-Car H3/M3/M3N/E3 Series

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## Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
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# How to Use This Manual

- **[Readers]**

This manual is intended for engineers who develop products which use the R-Car H3/M3/M3N processor.

- **[Purpose]**

This manual is intended to give users an understanding of the functions of the R-Car H3/M3/M3N processor device driver and to serve as a reference for developing hardware and software for systems that use this GStreamer plug-in.

- **[How to Read This Manual]**

It is assumed that the readers of this manual have general knowledge in the fields of electrical

— engineering, logic circuits, microcontrollers, and Linux.

→ Read this manual in the order of the CONTENTS.

— To understand the functions of a multimedia processor for R-Car H3/M3/M3N

→ See the R-Car H3/M3 User's Manual.

— To know the electrical specifications of the multimedia processor for R-Car H3/M3/M3N

→ See the R-Car H3/M3 Data Sheet.

- **[Conventions]**

The following symbols are used in this manual.

Data significance: Higher digits on the left and lower digits on the right

**Note:** Footnote for item marked with Note in the text

**Caution:** Information requiring particular attention

**Remark:** Supplementary information

Numeric representation: Binary ... xxxx, 0bxxxx, or xxxxB

Decimal ... xxxx

Hexadecimal ... 0xxxxx or xxxxH

Data type: Word ... 32 bits

Half word ... 16 bits

Byte ... 8 bits

## Table of Contents

1. Introduction .....	1
2. List of GStreamer Software Contents .....	2
2.1 Software .....	2
2.2 Documentation (How to handle) .....	2
2.3 Supported Function .....	3
3. Restriction .....	5
3.1 Known issue .....	5
3.2 Workaround .....	5
3.3 Close issue .....	5
3.4 Known functional limitations of delivered functions .....	5
3.5 Non-validated function .....	5
4. Notice .....	6

## 1. Introduction

This is a release note for GStreamer 1.X plugins which work on Multi Media Package (MMP) for R-Car H3 / M3 / M3N / E3 and R-Car H3e / M3e / M3Ne / E3e Linux.

This software has functionality as GStreamer 1.X plugins, which is created by Yocto recipe package and Linux BSP, and works on MMP for R-Car H3 / M3 / M3N / E3 and R-Car H3e / M3e / M3Ne / E3e Linux. This document describes how to handle the plugins, the known issues.

The assumption of this software is:

- To be installed Yocto recipe package from v5.9.0 (or later) and Linux BSP. Please refer to Yocto recipe Start-Up Guide.

## 2.List of GStreamer Software Contents

### 2.1 Software

GStreamer 1.X plug-in patch files are in renesas-rcar GitHub. (<https://github.com/renesas-rcar>)

Plugin	URL	Branch name	Commit ID
gst-omx	<a href="https://github.com/renesas-rcar/gst-omx">https://github.com/renesas-rcar/gst-omx</a>	RCAR-GEN3e/1.16.3	37296f66e3392d8dcdcdade14b89b05dd7507dc39
gst-plugins-good	<a href="https://github.com/renesas-rcar/gst-plugins-good">https://github.com/renesas-rcar/gst-plugins-good</a>	RCAR-GEN3e/1.16.3	58f1eea1eed684fc49c16d79a8cadfe3ad1f67c
gst-plugins-bad	<a href="https://github.com/renesas-rcar/gst-plugins-bad">https://github.com/renesas-rcar/gst-plugins-bad</a>	RCAR-GEN3e/1.16.3	0c9bd4e3fe26ec32928d2a3e93b618857ff50e26
gst-plugin-vspfilter	<a href="https://github.com/renesas-rcar/gst-plugin-vspfilter">https://github.com/renesas-rcar/gst-plugin-vspfilter</a>	RCAR-GEN3e/1.0.2	351d87c80ed57ce8e1b77bee3e97a3ec4b154eca

### 2.2 Documentation (How to handle)

Please refer to the following document to handle the plugins

GStreamer User's Manual (RENESAS\_RCH3M3M3NE3\_GStreamer\_UsersManual\_UME\_v2.40.pdf )

## 2.3 Supported Function

This software provides for GStreamer 1.X elements included the following plugins.

### **gst-omx plugin**

- omxh264dec : H.264 decoder Openmax IL element
- omxmpeg4videodec : MPEG4Video decoder Openmax IL element
- omxvc1dec : VC-1 decoder Openmax IL element
- omxh265dec : H.265 decoder Openmax IL element
- omxvp8dec : VP8 decoder Openmax IL element
- omxvp9dec : VP9 decoder Openmax IL element
- omxaaclcdec : AAC-LC decoder Openmax IL element
- omxaacdec : AAC Plus decoder Openmax IL element
- omxmp3dec : MP3 decoder Openmax IL element
- omxwmadec : WMA decoder Openmax IL element
- omxh264enc : H.264 encoder Openmax IL element
- omxvp8enc : VP8 encoder Openmax IL element

### **gst-plugins-good plugin**

- v4l2src : Reads frames from a Video4Linux2 device

### **gst-plugins-bad plugin**

- waylandsink : Sink element for Wayland/Weston
- kmssink : Sink element for kms/drm

### **gst-plugin-vspfitler plugin**

- vspfilter : Support a scaling and color space conversion by VSPI



Additionally, the following plugins is used in an operations check.

**gst-plugins-base plugin**

alsasink, audioresample, audioconvert, videorate

**gst-plugins-good plugin**

qtdemux, aacparse, mpegaudioparse, matroskademux, videocrop

**gst-plugins-bad plugin**

h264parse, mpeg4videoparse, h265parse

**gst-plugins-ugly plugin**

- asfdemux

## 3.Restrictio

### 3.1 Known issue

- None.

### 3.2 Workaround

- None.

### 3.3 Close issue

- #315407: [Alpha release] [v4l2src] Capture RCA signal has incorrect resolution (720x240)  
=> VIN driver issue. Fixed in Beta release
- #315409: [Alpha release] [gstomxvp9dec] Haven't supported dynamic resolution  
=> gstomx issue. Fixed in Beta release.
- #315404: [Alpha release] [v4l2src] Capture with scaling and cropping cannot work correctly.  
=> VIN driver issue. Fixed in Final release.
- #330766: [Beta release] [v4l2src] Issues happen with GStreamer (v4l2src) and VIN at high resolution (1280x720 or 1920x1080p)  
VIN driver issue. Fixed in Final release.
- #331004: [Beta release] [v4l2src] Cannot capture RCA with RGB16, YUY2, UYVY and BGRx formats  
VIN driver issue. Fixed in Final release
- #326493: Meet critical error “\_masked\_scan\_uint32\_peek: assertion '(guint64) offset + size <= reader->size - reader->byte' failed”  
Parser issue. Solution: Manual back-port fixing commit in v1.17.1:  
<https://github.com/GStreamer/gstreamer/commit/e94ad24b9f8a1d285f66ffc7a0829bda5810adda>
- #332867: Meet critical error “gst\_buffer\_add\_video\_time\_code\_meta\_full: assertion 'GST\_IS\_BUFFER (buffer)' failed”  
Parser issue. Solution: Manual back-port fixing commit in v1.19.0:  
<https://github.com/GStreamer/gst-plugins-bad/commit/0f084d46247f9009584b482cea8196b5b871cc73>

### 3.4 Known functional limitations of delivered functions

- Scaling function of v4l2src cannot use by restriction of HW on R-Car H3 ver1.x./Ver2.0
- Scaling function of v4l2src with interlaced capture data cannot use by restriction of HW on R-Car H3/M3/M3N/E3

### 3.5 Non-validated function

None.

## 4.Notice

- omxvp9dec can use only on M3N/E3/M3Ne/E3e device.

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REVISION HISTORY	Linux Interface Specification GStreamer Release Note: Software
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Rev.	Date	Description
		Summary
0.1	Oct. 26, 2015	<ul style="list-style-type: none"> <li>- New creation</li> <li>- support omxh264dec and omxaacldcdec</li> <li>- support waylandsink</li> <li>- support vspfilter</li> </ul>
0.2	Nov. 6, 2015	<ul style="list-style-type: none"> <li>- fix the problem that sometimes "Caught SIGSEGV" happens after video finished. (#78736)</li> </ul>
0.3	Mar. 9, 2016	<ul style="list-style-type: none"> <li>- Delete notice about media-ctl</li> <li>- fix the problem that the wl_buffer is not destroyed when the GstBuffer meta data is freed. (#82492, fix waylandsink)</li> <li>- fix the problem that actual framerate is reduced than requested framerate by the race condition of the thread in waylandsink. (#81452, fix waylandsink)</li> <li>- fix the problem of memory leakage. (#83766, fix waylandsink)</li> <li>- fix the YUV420M colorspace conversion (#80462, fix vspfilter)</li> </ul>
0.4	Apr. 15, 2016	gst-omx <ul style="list-style-type: none"> <li>- support omxmpeg4videodec, omxvc1dec, omxh265dec, omxaacdec, omxmp3dec, omxwmadec, omxh264enc</li> <li>- support lossy compression mode</li> <li>- fix the problem that cannot decode video file has 1 or 2 frames of dmabuf mode (#83788)</li> <li>- remove redundant source code (#85991)</li> </ul> gst-plugins-good <ul style="list-style-type: none"> <li>- support v4l2src</li> </ul>
0.5	May. 20, 2016	All <ul style="list-style-type: none"> <li>- Revise in order to use the zlinux_dmabuf protocol on new wayland</li> </ul> gst-plugins-bad <ul style="list-style-type: none"> <li>- Revise that waylandsink uses the zlinux_dmabuf protocol (#85778)</li> </ul> gst-omx <ul style="list-style-type: none"> <li>- Revise dmabuf implement to match with new waylandsink (#87158)</li> </ul> gst-plugin-vspfilter <ul style="list-style-type: none"> <li>- Add vspfilter's buffer and a new support for the MMAP io-mode (#89898)</li> </ul>
0.6	Aug. 24, 2016	All <ul style="list-style-type: none"> <li>- Change format of this release note about "Restriction" section</li> </ul> gst-plugins-bad <ul style="list-style-type: none"> <li>- support a new property that can disable the subsurface creation on waylandsink</li> <li>- fix the problem that inserts tee element before waylandsink (#91255)</li> <li>- fix the debug message issue (#94251)</li> </ul> gst-plugins-good <ul style="list-style-type: none"> <li>- support NV12/NV16 multi-plane format</li> </ul> gst-omx <ul style="list-style-type: none"> <li>- support dmabuf mode for omxh264enc</li> <li>- support buffer re-configuration to reduce consumption memory for omxvideo decoder</li> <li>- replace official OMX header file</li> <li>- remove redundant source code</li> <li>- fix the problem that cannot use-dmabuf in cases of hacks is copy/no-copy (#94794)</li> <li>- fix the problem of setting incorrect framerate in no-copy mode (no-copy=true) (#99367)</li> </ul> gst-plugin-vspfilter <ul style="list-style-type: none"> <li>- support to use symbolic link to the device specified of vspfilter</li> <li>- fix the problem that accesses NULL allocator (#92743)</li> <li>- fix the debug message issue (#94252) (#98661)</li> </ul>

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0.7	Jan. 26, 2017	<p>All</p> <ul style="list-style-type: none"> <li>- update a version of GStreamer from 1.4.5 to 1.6.3</li> <li>- fix some problems</li> </ul> <p>gst-plugins-bad/waylandsink</p> <ul style="list-style-type: none"> <li>- fix the problem that cannot be continuous playback of multiple files using gst-play app</li> </ul> <p>gst-plugins-good/v4l2src</p> <ul style="list-style-type: none"> <li>- support "no-resurrect-buf" property</li> <li>- fix the problem that captured stream displays some first frames then stuck (NV16/dmabuf + videoconvert plugin)</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- support receive mpeg audio stream have layer1/2 (omxmp3dec)</li> <li>- exclude checking resolution of video decoders</li> <li>- fix the problem that can not build without OMX video header</li> <li>- fix the problem that condition to check for number of received buffer more than nBufferCountActual of OMX MC is wrong (omxh264enc)</li> <li>- fix the problem that lack of hacks on gstomx.conf (omxmpeg4videodec)</li> </ul> <p>gst-plugin-vspfilter</p> <ul style="list-style-type: none"> <li>- replace RGB32 new format of v4l2 IF</li> <li>- fix memory leak</li> </ul>
0.8	Mar. 15, 2017	<p>All</p> <ul style="list-style-type: none"> <li>- fix some problems</li> </ul> <p>gst-plugins-bad/waylandsink</p> <ul style="list-style-type: none"> <li>- add the opaque region hint on non-alpha video surface to eliminate unnecessary composition</li> </ul> <p>gst-plugins-good/v4l2src</p> <ul style="list-style-type: none"> <li>- fix the problem of v4l2src userptr mode with gst-launch -e (#104508)</li> <li>- improve timestamp and offset of v4l2src for buffer of NV12/NV16 multi plane</li> <li>- add "--enable-ignore-fps-of-video-standard" configure option</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- fix the problem of SIGSEGV error after resolution error from OMX video decoder (#109937)</li> <li>- add timestamp information for buffer contain codec data of omxh264enc for improving timestamp information of qtmux</li> <li>- improve that H.264 encoding of Level 1 which is out of standard</li> </ul>
1.00	Aug. 8, 2017	<p>All</p> <ul style="list-style-type: none"> <li>- fix memory leak</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- improve seek function</li> <li>- improve reconfigure sequence</li> <li>- fix some log messages and coding style</li> </ul>

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1.10	Jan. 12, 2018	<p>All</p> <ul style="list-style-type: none"> <li>- update a version of GStreamer from 1.6.3 to 1.12.2</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- support omxvp8dec, omxvp9dec, omxvp8enc</li> </ul> <p>gst-plugin-vspfilter</p> <ul style="list-style-type: none"> <li>- support NV21/NV16/YUY2 format</li> </ul>
1.20	Mar. 14, 2018	<p>All</p> <ul style="list-style-type: none"> <li>- fix some problems</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- add a new property for h264encoder</li> <li>- fix the problem of the framerate information contained in the encoded container (#149523)</li> </ul> <p>gst-plugins-bad/waylandsink</p> <ul style="list-style-type: none"> <li>- add a new property that suppress setting interlace flag (#149515)</li> </ul> <p>gst-plugins-good/v4l2src</p> <ul style="list-style-type: none"> <li>- adjust the number of buffers to allocate with downstream requests (#149515)</li> </ul>
1.30	Apr. 18, 2018	<p>gst-omx</p> <ul style="list-style-type: none"> <li>- add a new property of cropping display for video decoder</li> <li>- update default output allocation for VP9 decoder</li> </ul>
1.40	Oct. 12, 2018	<p>All</p> <ul style="list-style-type: none"> <li>- fix static analysis warning</li> </ul> <p>gst-omx</p> <ul style="list-style-type: none"> <li>- improve buffer free timing</li> </ul> <p>gst-plugin-vspfilter</p> <ul style="list-style-type: none"> <li>- add a new property of full-range color conversion</li> </ul>
2.00	Nov 26, 2018	<p>gst-omx</p> <ul style="list-style-type: none"> <li>- improve bufferpool handling</li> </ul>
2.10	April 6, 2021	<ol style="list-style-type: none"> <li>1. Introduction <ul style="list-style-type: none"> <li>Add information of Gen3e</li> <li>Update yocto package into v5.1.0</li> </ul> </li> <li>2.1 Update release source code (branch &amp; commit)</li> <li>2.2 Update version of UM</li> <li>3.1: Update Known issue in yocto package 5.1.0 (#315404, #315407, #315409)</li> <li>- Update AddressList</li> </ol>
2.20	August 16, 2021	<ol style="list-style-type: none"> <li>1. Introduction <ul style="list-style-type: none"> <li>Update yocto package into v5.5.0</li> </ul> </li> <li>2.1 Update release source code (commit)</li> <li>2.2 Update version of UM</li> <li>2.3 Add kmssink and videocrop</li> <li>3.3: Update close issue in yocto package v5.5.0</li> </ol>
2.30	December 01, 2021	<ul style="list-style-type: none"> <li>- Update notice page</li> <li>- 1. Introduction: Update yocto package into v5.9.0</li> <li>- 2.1 Software: Update release source code (commit)</li> <li>- 2.2 Documentation (How to handle): Update version of GStreamer User's Manual to v2.30</li> <li>- 3.1 Known issue: Update to "None".</li> <li>- 3.3 Close issue: Update for closed issues (issues found from Alpha &amp; Beta Release and issue of parsers)</li> <li>- 4 Notice: Add M3Ne and E3e information: "omxvp9dec can use only on M3N/E3/M3Ne/E3e device."</li> </ul>

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2.40	December 25, 2023	All: - Update version of UM for support kernel 5.10.194.
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GStreamer

Release Note: Software

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1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.  
Tel: +1-408-432-8888, Fax: +1-408-434-5351

### **Renesas Electronics America Inc. San Jose Campus**

6024 Silver Creek Valley Road, San Jose, CA 95138, USA  
Tel: +1-408-284-8200, Fax: +1-408-284-2775

### **Renesas Electronics Canada Limited**

9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3  
Tel: +1-905-237-2004

### **Renesas Electronics Europe GmbH**

Arcadiastrasse 10, 40472 Düsseldorf, Germany  
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

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Room 101-T01, Floor 1, Building 7, Yard No. 7, 8th Street, Shangdi, Haidian District, Beijing 100085, China  
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

### **Renesas Electronics (Shanghai) Co., Ltd.**

Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai 200333, China  
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

### **Renesas Electronics Hong Kong Limited**

Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong  
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Tel: +65-6213-0200, Fax: +65-6213-0300

### **Renesas Electronics Malaysia Sdn.Bhd.**

Unit No 3A-1 Level 3A Tower 8 UOA Business Park, No 1 Jalan Pengaturcara U1/51A, Seksyen U1, 40150 Shah Alam, Selangor, Malaysia  
Tel: +60-3-5022-1288, Fax: +60-3-5022-1290

### **Renesas Electronics India Pvt. Ltd.**

No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India  
Tel: +91-80-67208700

### **Renesas Electronics Korea Co., Ltd.**

17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea  
Tel: +82-2-558-3737, Fax: +82-2-558-5338



ルネサスエレクトロニクス株式会社

■営業お問合せ窓口

<http://www.renesas.com>

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ルネサス エレクトロニクス株式会社 〒135-0061 東京都江東区豊洲3-2-24（豊洲フォレシア）

■技術的なお問合せおよび資料のご請求は下記へどうぞ。  
総合お問合せ窓口：<https://www.renesas.com/contact/>

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