GM8136

3DNR

User Guide
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GM8136 3DNR User Guide

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Chapter 1

Introduction

This chapter contains the following sections:

- 1.1 Overview
- 1.2 Features

1.1 Overview

3DNR in GM8136 is used to de-noise the frames. The de-noise process is critical for enhancing the scene quality and reducing the encoded bitrate for network transmission. In a real-time IP camera system, the de-noise function is considerably useful in eliminating the Gauss-distribution noise. With this function, the encoder only needs to make little effort to encode the source scene. On the other hand, the encoded files will be smaller and thus reduce the bitrate transferred in the network.

1.2 Features

3DNR contains the following features:

- Supports spatial noise reduction
- Supports temporal noise reduction
- Supports temporal edge enhancement
- Supports temporal strength learning
- Supports source and destination YCbCr swap

Chapter 2

3DNR Driver Module

In the GM8136 SDK release package, users can find the source code and kernel module of 3DNR from "/module/ft3dnr200".

The 3DNR driver module contains the following part:

- ft3dnr200.ko
  This is the 3DNR core. It includes the 3DNR hardware control layer, middleware (GM_Graph), communication layer, and export library layer.

Chapter 3

3DNR Proc Node

This chapter contains the following section:

- 3.1 /proc/thdnr200/dma Proc Node

The 3DNR driver module provides the proc node. Users can read the information of 3DNR or setup the configuration through the node. The current useful node is listed below.

```
/ # ls /proc/thdnr200/
dma
```

Figure 3-1. Proc Node of 3DNR Driver Module

Table 3-1 shows the proc node component of the 3DNR driver module.

Table 3-1. Proc Node Component of 3DNR Driver Module

/proc/thdnr200	dma	param

3.1 /proc/thdnr200/dma Proc Node

The 3DNR hardware supports the setting for the wait intervals of the DMA read and write channels. Users can use the proc node to set the wait intervals of the DMA read and write channels.

3.1.1 param

Users can use the /proc/thdnr200/dma/param node to get and set the parameter for wait intervals of the DMA read and write channels

Usage:

- Get all current values

  cat /proc/thdnr200/dma/param

```
/# cat /proc/thdnr200/dma/param

=== DMA Parameter ===
[00]WC_WAIT_VALUE (0x0~0xffff) : 0x0
[01]RC_WAIT_VALUE (0x0~0xffff) : 0x0
```

Usage:

- Set the param_id value to change the parameter value of DMA

  echo [param_id] [value] > /proc/thdnr200/dma/param

  param_id:

  0: WC_WAIT_VALUE is the wait interval of the DMA write channel for each DMA write burst.

  1: RC_WAIT_VALUE is the wait interval of the DMA read channel for each DMA read burst.

Chapter 4

3DNR Module Parameter

This chapter contains the following sections:

- 4.1 max_minors Module Parameter
- 4.2 res_cfg Module Parameter
- 4.3 Other Module Parameters

When loading the driver module, users can specify the module parameter of the module name to set the special value used in the driver. Currently, the useful module parameters are described below.

4.1 max_minors Module Parameter

Users can specify the maximum number of the channels used by the middleware. The usage is:

```
# insmod ft3dnr200.ko max_minors=16
```

If this parameter is not specified, the default value will be used.

4.2 res_cfg Module Parameter

The 3DNR hardware needs the memory space to store the output data depending on the specification of the product. Users can specify various resolutions as the module parameter. The format of the parameter is "resolution_keywords/channels"; if many resolutions are specified, they should be separated by a comma.

For example, users need the driver to provide one channel of 2M resolution, one channel of VGA resolution, and one channel of CIF resolution:

```
# insmod ft3dnr200.ko res_cfg="2M/1,VGA/1,CIF/1"
```

If this parameter is not specified, the default value will be extracted from the middleware configuration file, "gmlib.cfg", under the [ENCODE_DIDN] section.

4.3 Other Module Parameters

For other module parameters that are not described above, it is not allowed to be modified by users; it is only used by the factory configuration.