

V4L2_META_FMT_VSP1_HGO ('VSPH')

Renesas R-Car VSP1 1-D Histogram Data

Description

This format describes histogram data generated by the Renesas R-Car VSP1 1-D Histogram (HGO) engine.

The VSP1 HGO is a histogram computation engine that can operate on RGB, YCrCb or HSV data. It operates on a possibly cropped and subsampled input image and computes the minimum, maximum and sum of all pixels as well as per-channel histograms.

The HGO can compute histograms independently per channel, on the maximum of the three channels (RGB data only) or on the Y channel only (YCbCr only). It can additionally output the histogram with 64 or 256 bins, resulting in four possible modes of operation.

- In *64 bins normal mode*, the HGO operates on the three channels independently to compute three 64-bins histograms. RGB, YCbCr and HSV image formats are supported.
- In *64 bins maximum mode*, the HGO operates on the maximum of the (R, G, B) channels to compute a single 64-bins histogram. Only the RGB image format is supported.
- In *256 bins normal mode*, the HGO operates on the Y channel to compute a single 256-bins histogram. Only the YCbCr image format is supported.
- In *256 bins maximum mode*, the HGO operates on the maximum of the (R, G, B) channels to compute a single 256-bins histogram. Only the RGB image format is supported.

Byte Order. All data is stored in memory in little endian format. Each cell in the tables contains one byte.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\userspace-api\media\v4l\linux-master) (Documentation) (userspace-api) (media) (v4l)pixfmt-meta-vsp1-hgo.rst, line 44)

Unknown directive type "flat-table".

```
.. flat-table:: VSP1 HGO Data - 64 Bins, Normal Mode (792 bytes)
   :header-rows: 2
   :stub-columns: 0

   * - Offset
     - :cspan:`4` Memory
   * -
     - [31:24]
     - [23:16]
     - [15:8]
     - [7:0]
   * - 0
     -
     - R/Cr/H max [7:0]
     -
     - R/Cr/H min [7:0]
   * - 4
     -
     - G/Y/S max [7:0]
     -
     - G/Y/S min [7:0]
   * - 8
     -
     - B/Cb/V max [7:0]
     -
     - B/Cb/V min [7:0]
   * - 12
     - :cspan:`4` R/Cr/H sum [31:0]
   * - 16
     - :cspan:`4` G/Y/S sum [31:0]
   * - 20
     - :cspan:`4` B/Cb/V sum [31:0]
   * - 24
     - :cspan:`4` R/Cr/H bin 0 [31:0]
   * -
     - :cspan:`4` ...
   * - 276
     - :cspan:`4` R/Cr/H bin 63 [31:0]
   * - 280
     - :cspan:`4` G/Y/S bin 0 [31:0]
   * -
     - :cspan:`4` ...
   * - 532
```

```

- :cspan: `4` G/Y/S bin 63 [31:0]
* - 536
- :cspan: `4` B/Cb/V bin 0 [31:0]
* -
- :cspan: `4` ...
* - 788
- :cspan: `4` B/Cb/V bin 63 [31:0]

```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\userspace-api\media\v41\linux-master) (Documentation) (userspace-api) (media) (v41)pixfmt-meta-vspl-hgo.rst, line 95)

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```

.. flat-table:: VSP1 HGO Data - 64 Bins, Max Mode (264 bytes)
   :header-rows: 2
   :stub-columns: 0

   * - Offset
     - :cspan: `4` Memory
   * -
     - [31:24]
     - [23:16]
     - [15:8]
     - [7:0]
   * - 0
     -
     - max(R,G,B) max [7:0]
     -
     - max(R,G,B) min [7:0]
   * - 4
     - :cspan: `4` max(R,G,B) sum [31:0]
   * - 8
     - :cspan: `4` max(R,G,B) bin 0 [31:0]
   * -
     - :cspan: `4` ...
   * - 260
     - :cspan: `4` max(R,G,B) bin 63 [31:0]

```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\userspace-api\media\v41\linux-master) (Documentation) (userspace-api) (media) (v41)pixfmt-meta-vspl-hgo.rst, line 120)

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```

.. flat-table:: VSP1 HGO Data - 256 Bins, Normal Mode (1032 bytes)
   :header-rows: 2
   :stub-columns: 0

   * - Offset
     - :cspan: `4` Memory
   * -
     - [31:24]
     - [23:16]
     - [15:8]
     - [7:0]
   * - 0
     -
     - Y max [7:0]
     -
     - Y min [7:0]
   * - 4
     - :cspan: `4` Y sum [31:0]
   * - 8
     - :cspan: `4` Y bin 0 [31:0]
   * -
     - :cspan: `4` ...
   * - 1028
     - :cspan: `4` Y bin 255 [31:0]

```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\userspace-api\media\v41\linux-master) (Documentation) (userspace-api) (media) (v41)pixfmt-meta-vspl-hgo.rst, line 145)

Unknown directive type "flat-table".

```
.. flat-table:: VSPl HGO Data - 256 Bins, Max Mode (1032 bytes)
  :header-rows: 2
  :stub-columns: 0

  * - Offset
    - :cspan:`4` Memory
  * -
    - [31:24]
    - [23:16]
    - [15:8]
    - [7:0]
  * - 0
    -
    - max(R,G,B) max [7:0]
    -
    - max(R,G,B) min [7:0]
  * - 4
    - :cspan:`4` max(R,G,B) sum [31:0]
  * - 8
    - :cspan:`4` max(R,G,B) bin 0 [31:0]
  * -
    - :cspan:`4` ...
  * - 1028
    - :cspan:`4` max(R,G,B) bin 255 [31:0]
```