

ioctl VIDIOC_ENUM_FMT

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\userspace-api\media\v4l\linux-master) (Documentation) (userspace-api) (media) (v4l)vidioc-enum-fmt.rst, line 2)

Unknown directive type "c.namespace".

```
.. c:namespace:: V4L
```

Name

VIDIOC_ENUM_FMT - Enumerate image formats

Synopsis

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Unknown directive type "c.macro".

```
.. c:macro:: VIDIOC_ENUM_FMT
```

```
int ioctl(int fd, VIDIOC_ENUM_FMT, struct v4l2_fmtdesc *argp)
```

Arguments

fd

File descriptor returned by `c:func:open()`.

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Unknown interpreted text role "c.func".

argp

Pointer to struct `c:type:v4l2_fmtdesc`.

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Unknown interpreted text role "c.type".

Description

To enumerate image formats applications initialize the `type`, `mbus_code` and `index` fields of struct `c:type:v4l2_fmtdesc` and call the `ref:VIDIOC_ENUM_FMT` ioctl with a pointer to this structure. Drivers fill the rest of the structure or return an `EINVAL` error code. All formats are enumerable by beginning at index zero and incrementing by one until `EINVAL` is returned. If applicable, drivers shall return formats in preference order, where preferred formats are returned before (that is, with lower `index` value) less-preferred formats.

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Unknown interpreted text role "c.type".

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Unknown interpreted text role "ref".

Depending on the `V4L2_CAP_IO_MC` [ref](#): `capability <device-capabilities>`, the `mbus_code` field is handled differently:

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Unknown interpreted text role "ref".

1. `V4L2_CAP_IO_MC` is not set (also known as a 'video-node-centric' driver)

Applications shall initialize the `mbus_code` field to zero and drivers shall ignore the value of the field.

Drivers shall enumerate all image formats.

Note

After switching the input or output the list of enumerated image formats may be different.

2. `V4L2_CAP_IO_MC` is set (also known as an 'MC-centric' driver)

If the `mbus_code` field is zero, then all image formats shall be enumerated.

If the `mbus_code` field is initialized to a valid (non-zero) [ref](#): `media bus format code <v4l2-mbus-pixelcode>`, then drivers shall restrict enumeration to only the image formats that can produce (for video output devices) or be produced from (for video capture devices) that media bus code. If the `mbus_code` is unsupported by the driver, then `EINVAL` shall be returned.

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Unknown interpreted text role "ref".

Regardless of the value of the `mbus_code` field, the enumerated image formats shall not depend on the active configuration of the video device or device pipeline.

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Unknown directive type "c.type".

```
.. c:type:: v4l2_fmtdesc
```

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Unknown directive type "cssclass".

```
.. cssclass:: longtable
```

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Unknown directive type "tabularcolumns".

```
.. tabularcolumns:: |p{4.4cm}|p{4.4cm}|p{8.5cm}|
```

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Unknown directive type "flat-table".

```
.. flat-table:: struct v4l2_fmtdesc
  :header-rows: 0
  :stub-columns: 0
  :widths:      1 1 2

  * - u32
    - ``index``
    - Number of the format in the enumeration, set by the application.
      This is in no way related to the ``pixelformat`` field.
  * - u32
    - ``type``
    - Type of the data stream, set by the application. Only these types
      are valid here: ``V4L2_BUF_TYPE_VIDEO_CAPTURE``,
      ``V4L2_BUF_TYPE_VIDEO_CAPTURE_MPLANE``,
      ``V4L2_BUF_TYPE_VIDEO_OUTPUT``,
      ``V4L2_BUF_TYPE_VIDEO_OUTPUT_MPLANE``,
      ``V4L2_BUF_TYPE_VIDEO_OVERLAY``,
      ``V4L2_BUF_TYPE_SDR_CAPTURE``,
      ``V4L2_BUF_TYPE_SDR_OUTPUT``,
      ``V4L2_BUF_TYPE_META_CAPTURE`` and
      ``V4L2_BUF_TYPE_META_OUTPUT``.
      See :c:type:`v4l2_buf_type`.
  * - u32
    - ``flags``
    - See :ref:`fmtdesc-flags`
  * - u8
    - ``description`` [32]
    - Description of the format, a NUL-terminated ASCII string. This
      information is intended for the user, for example: "YUV 4:2:2".
  * - u32
    - ``pixelformat``
    - The image format identifier. This is a four character code as
      computed by the v4l2_fourcc() macro:
  * - :cspan:`2`

  .. _v4l2-fourcc:

  ``#define v4l2_fourcc(a,b,c,d)``

  ``(( (__u32) (a) << 0) | (( __u32) (b) << 8) | (( __u32) (c) << 16) | (( __u32) (d) << 24))``

  Several image formats are already defined by this specification in
  :ref:`pixfmt`.

  .. attention::

      These codes are not the same as those used
      in the Windows world.

  * - u32
    - ``mbus_code``
    - Media bus code restricting the enumerated formats, set by the
      application. Only applicable to drivers that advertise the
      ``V4L2_CAP_IO_MC`` :ref:`capability <device-capabilities>`, shall be 0
      otherwise.
  * - u32
    - ``reserved`` [3]
    - Reserved for future extensions. Drivers must set the array to
      zero.
```

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Unknown directive type "tabularcolumms".

```
.. tabularcolumms:: |p{8.4cm}|p{1.8cm}|p{7.1cm}|
```

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Unknown directive type "cssclass".

```
.. cssclass:: longtable
```

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Unknown directive type "flat-table".

```
.. flat-table:: Image Format Description Flags
   :header-rows: 0
   :stub-columns: 0
   :widths:      3 1 4

   * - ``V4L2_FMT_FLAG_COMPRESSED``
     - 0x0001
     - This is a compressed format.
   * - ``V4L2_FMT_FLAG_EMULATED``
     - 0x0002
     - This format is not native to the device but emulated through
       software (usually libv4l2), where possible try to use a native
       format instead for better performance.
   * - ``V4L2_FMT_FLAG_CONTINUOUS_BYTESTREAM``
     - 0x0004
     - The hardware decoder for this compressed bytestream format (aka coded
       format) is capable of parsing a continuous bytestream. Applications do
       not need to parse the bytestream themselves to find the boundaries
       between frames/fields.

       This flag can only be used in combination with the
       ``V4L2_FMT_FLAG_COMPRESSED`` flag, since this applies to compressed
       formats only. This flag is valid for stateful decoders only.
   * - ``V4L2_FMT_FLAG_DYN_RESOLUTION``
     - 0x0008
     - Dynamic resolution switching is supported by the device for this
       compressed bytestream format (aka coded format). It will notify the user
       via the event ``V4L2_EVENT_SOURCE_CHANGE`` when changes in the video
       parameters are detected.

       This flag can only be used in combination with the
       ``V4L2_FMT_FLAG_COMPRESSED`` flag, since this applies to
       compressed formats only. This flag is valid for stateful codecs only.
   * - ``V4L2_FMT_FLAG_ENC_CAP_FRAME_INTERVAL``
     - 0x0010
     - The hardware encoder supports setting the ``CAPTURE`` coded frame
       interval separately from the ``OUTPUT`` raw frame interval.
       Setting the ``OUTPUT`` raw frame interval with :ref:`VIDIOC_S_PARM <VIDIOC_G_PARM>`
       also sets the ``CAPTURE`` coded frame interval to the same value.
       If this flag is set, then the ``CAPTURE`` coded frame interval can be
       set to a different value afterwards. This is typically used for
       offline encoding where the ``OUTPUT`` raw frame interval is used as
       a hint for reserving hardware encoder resources and the ``CAPTURE`` coded
       frame interval is the actual frame rate embedded in the encoded video
       stream.

       This flag can only be used in combination with the
       ``V4L2_FMT_FLAG_COMPRESSED`` flag, since this applies to
       compressed formats only. This flag is valid for stateful encoders only.
   * - ``V4L2_FMT_FLAG_CSC_COLORSPACE``
     - 0x0020
     - The driver allows the application to try to change the default
       colorspace. This flag is relevant only for capture devices.
       The application can ask to configure the colorspace of the capture device
       when calling the :ref:`VIDIOC_S_FMT <VIDIOC_G_FMT>` ioctl with
       :ref:`V4L2_PIX_FMT_FLAG_SET_CSC <v4l2-pix-fmt-flag-set-csc>` set.
   * - ``V4L2_FMT_FLAG_CSC_XFER_FUNC``
     - 0x0040
     - The driver allows the application to try to change the default
       transfer function. This flag is relevant only for capture devices.
       The application can ask to configure the transfer function of the capture
       device when calling the :ref:`VIDIOC_S_FMT <VIDIOC_G_FMT>` ioctl with
       :ref:`V4L2_PIX_FMT_FLAG_SET_CSC <v4l2-pix-fmt-flag-set-csc>` set.
   * - ``V4L2_FMT_FLAG_CSC_YCBCR_ENC``
     - 0x0080
     - The driver allows the application to try to change the default
       Y'CbCr encoding. This flag is relevant only for capture devices.
       The application can ask to configure the Y'CbCr encoding of the capture device
       when calling the :ref:`VIDIOC_S_FMT <VIDIOC_G_FMT>` ioctl with
       :ref:`V4L2_PIX_FMT_FLAG_SET_CSC <v4l2-pix-fmt-flag-set-csc>` set.
   * - ``V4L2_FMT_FLAG_CSC_HSV_ENC``
     - 0x0080
```

- The driver allows the application to try to change the default HSV encoding. This flag is relevant only for capture devices. The application can ask to configure the HSV encoding of the capture device when calling the :ref:`VIDIOC_S_FMT <VIDIOC_G_FMT>` ioctl with :ref:`V4L2_PIX_FMT_FLAG_SET_CSC <v4l2-pix-fmt-flag-set-csc>` set.
- * - ``V4L2_FMT_FLAG_CSC_QUANTIZATION``
- 0x0100
- The driver allows the application to try to change the default quantization. This flag is relevant only for capture devices. The application can ask to configure the quantization of the capture device when calling the :ref:`VIDIOC_S_FMT <VIDIOC_G_FMT>` ioctl with :ref:`V4L2_PIX_FMT_FLAG_SET_CSC <v4l2-pix-fmt-flag-set-csc>` set.

Return Value

On success 0 is returned, on error -1 and the `errno` variable is set appropriately. The generic error codes are described at the :ref:`Generic Error Codes <gen-errors>` chapter.

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Unknown interpreted text role "ref".

EINVAL

The struct :c:type:`v4l2_fmtdesc` type is not supported or the `index` is out of bounds.

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Unknown interpreted text role "c:type".

If `V4L2_CAP_IO_MC` is set and the specified `mbus_code` is unsupported, then also return this error code.