

# ioctl VIDIOC\_G\_FMT, VIDIOC\_S\_FMT, VIDIOC\_TRY\_FMT

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Unknown directive type "c:namespace".

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

## Name

VIDIOC\_G\_FMT - VIDIOC\_S\_FMT - VIDIOC\_TRY\_FMT - Get or set the data format, try a format

## Synopsis

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Unknown directive type "c:macro".

```
.. c:macro:: VIDIOC_G_FMT
```

```
int ioctl(int fd, VIDIOC_G_FMT, struct v4l2_format *argp)
```

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Unknown directive type "c:macro".

```
.. c:macro:: VIDIOC_S_FMT
```

```
int ioctl(int fd, VIDIOC_S_FMT, struct v4l2_format *argp)
```

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Unknown directive type "c:macro".

```
.. c:macro:: VIDIOC_TRY_FMT
```

```
int ioctl(int fd, VIDIOC_TRY_FMT, struct v4l2_format *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_format`.

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Unknown interpreted text role "c:type".

## Description

These ioctls are used to negotiate the format of data (typically image format) exchanged between driver and application.

To query the current parameters applications set the `type` field of a struct `c:type:'v4l2_format'` to the respective buffer (stream) type. For example video capture devices use `V4L2_BUF_TYPE_VIDEO_CAPTURE` or `V4L2_BUF_TYPE_VIDEO_CAPTURE_MPLANE`. When the application calls the `ref'VIDIOC_G_FMT<VIDIOC_G_FMT>'` ioctl with a pointer to this structure the driver fills the respective member of the `fmt` union. In case of video capture devices that is either the struct `c:type:'v4l2_pix_format'` `pix` or the struct `c:type:'v4l2_pix_format_mplane'` `pix_mp` member. When the requested buffer type is not supported drivers return an `EINVAL` error code.

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Unknown interpreted text role "c:type".

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Unknown interpreted text role "ref".

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Unknown interpreted text role "c:type".

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Unknown interpreted text role "c:type".

To change the current format parameters applications initialize the `type` field and all fields of the respective `fmt` union member. For details see the documentation of the various devices types in `ref'devices'`. Good practice is to query the current parameters first, and to modify only those parameters not suitable for the application. When the application calls the `ref'VIDIOC_S_FMT<VIDIOC_G_FMT>'` ioctl with a pointer to a struct `c:type:'v4l2_format'` structure the driver checks and adjusts the parameters against hardware abilities. Drivers should not return an error code unless the `type` field is invalid, this is a mechanism to fathom device capabilities and to approach parameters acceptable for both the application and driver. On success the driver may program the hardware, allocate resources and generally prepare for data exchange. Finally the `ref'VIDIOC_S_FMT<VIDIOC_G_FMT>'` ioctl returns the current format parameters as `ref'VIDIOC_G_FMT<VIDIOC_G_FMT>'` does. Very simple, inflexible devices may even ignore all input and always return the default parameters. However all V4L2 devices exchanging data with the application must implement the `ref'VIDIOC_G_FMT<VIDIOC_G_FMT>'` and `ref'VIDIOC_S_FMT<VIDIOC_G_FMT>'` ioctl. When the requested buffer type is not supported drivers return an `EINVAL` error code on a `ref'VIDIOC_S_FMT<VIDIOC_G_FMT>'` attempt. When I/O is already in progress or the resource is not available for other reasons drivers return the `EBUSY` error code.

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Unknown interpreted text role "c:type".

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Unknown interpreted text role "ref".

The `ref:VIDIOC_TRY_FMT<VIDIOC_G_FMT>` ioctl is equivalent to `ref:VIDIOC_S_FMT<VIDIOC_G_FMT>` with one exception: it does not change driver state. It can also be called at any time, never returning `EBUSY`. This function is provided to negotiate parameters, to learn about hardware limitations, without disabling I/O or possibly time consuming hardware preparations. Although strongly recommended drivers are not required to implement this ioctl.

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The format as returned by `ref:VIDIOC_TRY_FMT<VIDIOC_G_FMT>` must be identical to what `ref:VIDIOC_S_FMT<VIDIOC_G_FMT>` returns for the same input or output.

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**api] [media] [v4l]vidioc-g-fmt.rst, line 87); [backlink](#)**

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Unknown directive type "c.type".

```
.. c:type:: v4l2_format
```

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Unknown directive type "tabularcolumns".

```
.. tabularcolumns:: |p{7.4cm}|p{4.4cm}|p{5.5cm}|
```

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Unknown directive type "flat-table".

```
.. flat-table:: struct v4l2_format
   :header-rows: 0
   :stub-columns: 0

   * - __u32
     - ``type``
     - Type of the data stream, see :c:type:`v4l2_buf_type`.
   * - union {
     - ``fmt``
   * - struct :c:type:`v4l2_pix_format`
     - ``pix``
     - Definition of an image format, see :ref:`pixfmt`, used by video
       capture and output devices.
   * - struct :c:type:`v4l2_pix_format_mplane`
     - ``pix_mp``
     - Definition of an image format, see :ref:`pixfmt`, used by video
       capture and output devices that support the
       :ref:`multi-planar` version of the API <planar-apis>.
   * - struct :c:type:`v4l2_window`
     - ``win``
     - Definition of an overlaid image, see :ref:`overlay`, used by
       video overlay devices.
   * - struct :c:type:`v4l2_vbi_format`
     - ``vbi``
     - Raw VBI capture or output parameters. This is discussed in more
       detail in :ref:`raw-vbi`. Used by raw VBI capture and output
       devices.
   * - struct :c:type:`v4l2_sliced_vbi_format`
     - ``sliced``
     - Sliced VBI capture or output parameters. See :ref:`sliced` for
       details. Used by sliced VBI capture and output devices.
   * - struct :c:type:`v4l2_sdr_format`
     - ``sdr``
     - Definition of a data format, see :ref:`pixfmt`, used by SDR
       capture and output devices.
   * - struct :c:type:`v4l2_meta_format`
     - ``meta``
     - Definition of a metadata format, see :ref:`meta-formats`, used by
       metadata capture devices.
   * - __u8
     - ``raw_data`` [200]
     - Place holder for future extensions.
   * - }
   -
```

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_format'` `type` field is invalid or the requested buffer type not supported.

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Unknown interpreted text role "c:type".

## EBUSY

The device is busy and cannot change the format. This could be because the device is streaming or buffers are allocated or queued to the driver. Relevant for `ref:'VIDIOC_S_FMT'<VIDIOC_G_FMT>` only.

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Unknown interpreted text role "ref".