

photocathode, except that it is more intense. In other words, to each photon of the flux of photons incident on the photocathode, correspond several photons of the flux of photons outputted by the phosphor screen.

5 The photocathode and the multiplication means are placed in a vacuum tube provided with an input window to allow the flux of photons incident on the photocathode to pass through. The vacuum tube can be closed by the phosphor screen.

When the flux of photons incident on the photocathode is converted into an initial flux of electrons, the information about the photon wavelength is lost.
10 Thus, the flux of photons outputted by the phosphor screen correspond to a monochrome image.

Document GB 2 302 444 discloses an image intensifier tube capable of restoring a polychromatic image.

A first matrix of primary colour filters is located upstream from the
15 photocathode, to filter an incident flux of photons before it reaches the photocathode.

A primary colour filter is a spectral filter that does not transmit part of the visible spectrum complementary to this primary colour. Thus, a primary colour filter is a spectral filter that transmits part of the visible spectrum corresponding
20 to this primary colour, and possibly a part of the infrared spectrum, and even part of the near-UV spectrum (200 to 400 nm) or even the UV spectrum (10 to 200 nm).

The first matrix of primary colour filters is composed of red, green and blue filters, that draw primary colour pixels on the photocathode. Thus, a flux of
25 photons incident on a given pixel of the photocathode corresponds to a given primary colour. The flux of electrons outputted in response by the photocathode does not contain any chromatic information directly, but corresponds to a given primary colour.

Each elementary filter 111 is associated with at least one pixel 131 of the sensor. In other words, each elementary filter 111 is aligned with at least one pixel 131 of the sensor, such that the largest part of a flux of electrons or photons, resulting from photons transmitted by this elementary filter 111 reaches this at least one pixel 131. Each elementary filter 111 is preferably associated with exactly one pixel 131 of the sensor. Preferably, the area of an elementary filter 111 corresponds to the area of a pixel 131 of the sensor or an area corresponding to the juxtaposition of an integer number of pixels 131 of the sensor.

Since each elementary filter 111 is associated with at least one pixel 131 of the sensor, a pixel of the sensor associated with a panchromatic elementary filter can be named a "panchromatic pixel" and a pixel of the sensor associated with a primary colour elementary filter can be named a "primary colour pixel". Panchromatic pixels detect electrons or photons associated with the spectral band transmitted by the panchromatic filters. Each type of primary colour pixel detects electrons or photons associated with the spectral band transmitted by the corresponding type of primary colour filter.

The sensor 130 is connected to processing means 140, in other words to calculation means including particularly a processor or a microprocessor. The processing means 140 receive, as input, electrical signals outputted by the sensor 130, corresponding for each pixel 131 to the flux of photons received and detected by this pixel when the sensor is sensitive to photons, or to the flux of electrons received and detected by this pixel when the sensor is sensitive to electrons. The processing means 140 supply an image at the output corresponding to the initial flux of photons incident on the matrix of elementary filters, this flux having been intensified.

The processing means 140 are configured to assign, to each pixel of the sensor, information about a type of elementary filter associated with said pixel. To this end, they store information for associating each pixel of the sensor with a

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