

85.28

85.28 - Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus.

- Cathode-ray tube monitors :

8528.41 - - Of a kind solely or principally used in an automatic data processing system of heading 84.71

8528.49 - - Other

- Other monitors :

8528.51 - - Of a kind solely or principally used in an automatic data processing system of heading 84.71

8528.59 - - Other

- Projectors :

8528.61 - - Of a kind solely or principally used in an automatic data processing system of heading 84.71

8528.69 - - Other

- Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus :

8528.71 - - Not designed to incorporate a video display or screen

8528.72 - - Other, colour

8528.73 - - Other, monochrome

This heading includes :

- (1) Monitors and projectors, not incorporating television reception apparatus.
- (2) Television reception apparatus, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus, for the display of signals (television sets).
- (3) Apparatus for the reception of television signals, without display capabilities (e.g., receivers of satellite television broadcasts).

Monitors, projectors and television sets utilize different technologies, such as CRT (cathode-ray tube), LCD (liquid crystal display), DMD (digital micromirror device), OLED (organic light emitting diodes) and plasma, to display images.

Monitors and projectors may be capable of receiving a variety of signals from different sources. However, if they incorporate a television tuner they are considered to be reception apparatus for television.

**(A) MONITORS OF A KIND SOLELY OR PRINCIPALLY USED IN AN
AUTOMATIC DATA PROCESSING SYSTEM OF HEADING 84.71**

This group includes CRT and non-CRT (e.g., flat panel screen) monitors which provide a graphical presentation of the data processed. These monitors are distinguishable from other types of monitors (see (B) below) and from television receivers. They include :

- (1) Those monitors which are capable of accepting a signal only from the central processing unit of an automatic data processing machine and, therefore, are not able to reproduce a colour image from a composite video signal whose waveform conforms to a broadcast standard (NTSC, SECAM, PAL, D-MAC, etc.). They are fitted with connectors characteristic of data processing systems (e.g., RS-232C interface, DIN or SUB-D connectors) and do not have an audio circuit. They are controlled by special adaptors (e.g., monochrome or graphics adaptors) which are integrated in the central processing unit of the automatic data processing machine.
- (2) CRT monitors having a display pitch size starting at 0.41 mm for medium resolution, which gets smaller as the resolution increases.
- (3) Those CRT monitors which, in order to accommodate the presentation of small yet well-defined images, utilize smaller dot (pixel) sizes and greater convergence standards than those applicable to the monitors described at (B) below and television receivers. (Convergence is the ability of the electron gun(s) to excite a single spot on the face of the cathode-ray tube without disturbing any of the adjoining spots.)
- (4) CRT monitors whose video frequency (bandwidth), which is the measurement determining how many dots can be transmitted per second to form the image, is generally 15 MHz or greater. Whereas, in the case of the monitors described at (B) below, the bandwidth is generally no greater than 6 MHz. The horizontal scanning frequency of these monitors varies according to the standards for various display modes, generally from 15 kHz to over 155 kHz. Many are capable of multiple horizontal scanning frequencies. The horizontal scanning frequency of the monitors described at (B) below is fixed, usually 15.6 or 15.7 kHz depending on the applicable television standard. Moreover, the monitors of this group do not operate in conformity with national or international broadcast frequency standards for public broadcasting or with frequency standards for closed-circuit television.

The monitors of this group are characterised by low electromagnetic field emissions and they frequently incorporate tilt and swivel adjusting mechanisms, glare-free surfaces, flicker-free display, and other ergonomic design characteristics to facilitate prolonged periods of viewing at close proximity to the monitor.

**(B) MONITORS OTHER THAN THOSE OF A KIND SOLELY OR
PRINCIPALLY USED IN AN AUTOMATIC DATA PROCESSING SYSTEM OF
HEADING 84.71**

This group includes monitors which are receivers connected directly to the video camera or recorder by means of co-axial cables, so that all the radio-frequency circuits are eliminated. They are used by television companies or for closed-circuit television (airports, railway stations, factories, hospitals, etc.). These apparatus consist essentially of devices which can generate a point of light and display it on a screen synchronously with the source signals. They incorporate one or more video amplifiers with which the intensity of the point can be varied. They can, moreover, have separate inputs for red (R), green (G) and blue (B), or be coded in accordance with a particular standard (NTSC, SECAM, PAL, D-MAC, etc.). For reception of coded signals, the monitor must be equipped with a decoding device covering (the separation of) the R, G and B signals. The most common means of image reconstitution is the cathode-ray tube, for direct vision, or a projector with up to three projection cathode-ray tubes; however, other monitors achieve the same objective by different means (e.g., liquid crystal screens, diffraction of light rays on to a film of oil). These may be in the form of CRT monitors or flat panel displays, e.g., LCD, LED, plasma.

(C) PROJECTORS

Projectors enable the image normally reproduced on the screen of a television receiver or of a monitor to be projected on an external surface. They may be based on CRT or flat panel (e.g., DMD, LCD, plasma) technology.

(D) RECEPTION APPARATUS FOR TELEVISION

This group includes apparatus whether or not designed to incorporate a video display or screen, such as :

- (1) Receivers of television broadcasts (terrestrial, cable or satellite) which do not include a display device (CRT, LCD, etc.). These apparatus receive signals and convert them into a signal suitable for display. They may also incorporate a modem for connection to the Internet.

These receivers are intended to be used with video recording or reproducing apparatus, monitors, projectors or televisions. However, devices which simply isolate high-frequency television signals (sometimes called video tuners) are to be classified as parts in **heading 85.29**.

- (2) Television receivers for industrial use (e.g., for reading instruments at a distance, or for observation in dangerous localities). With this apparatus the transmission is often by line.
- (3) Television receivers of all kinds (LCD, plasma, CRT, etc.) used in the home (television sets), whether or not incorporating a radio-broadcast receiver, video cassette recorder, DVD player, DVD recorder, satellite receiver, etc.

PARTS

Subject to the general provisions regarding the classification of parts (see the General Explanatory Note to Section XVI), parts of the apparatus of this heading are classified in **heading 85.29**.

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The heading **excludes**, *inter alia* :

- (a) Video recording or reproducing apparatus (**heading 85.21**).
- (b) Special purpose vehicles (e.g., vans for broadcasting) permanently equipped with television receivers or other apparatus of this heading (generally **heading 87.05**).
- (c) Cinematographic projectors (**heading 90.07**) and image projectors of **heading 90.08**.