

# Dictionary of Computing

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## BAND-REJECT FILTER

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mance advantage over \*drum (or barrel) printers; any mistiming of the impact on a horizontal-font machine results in a change in the space between characters, which is less noticeable than the vertical displacement that occurs with mistiming in a drum printer.

The majority of new impact line printers from the late 1970s onward have been band printers. Machines are available at speeds from 300 lpm to 2500 lpm, the higher-speed printers using a 64 character repertoire. Designs for the lower-speed machines often time-share a print hammer between adjacent print positions.

**band-reject filter** *Another name for band-stop filter.*

**band-stop filter (band-reject filter)** A \*filtering device that permits only those components in the \*Fourier transform domain whose frequencies lie below one critical value or above another (higher) critical value to pass through with little attenuation; all components whose frequencies lie between the critical values are highly attenuated.

If the two critical values are very close together, the device is called a *notch filter*. Notch filters are used, for example, in \*modems in order to prevent certain components of the data signal from interfering with equipment in the telephone system.

**bandwidth** 1. of a transmission \*channel. A measure of the information-carrying capacity of the channel, usually the range of \*frequencies passed by the channel. This will often consist of a single \*passband, but may instead consist of several distinct (nonoverlapping) passbands. Each passband contributes to the bandwidth of the channel a quantity equal to the difference between its upper and lower frequency limits; the sum of all such differences gives the total bandwidth.

In these cases bandwidth is measured in frequency units, i.e. hertz (Hz). If the bandwidth is considered in a transform domain other than frequency (such as \*sequency) then it is measured in the appropriate units.

There are several loose classifications of frequency bandwidths employed for con-

venience of description in various areas of technology; one classification is as follows:

*narrowband* (up to 300 Hz)

*voiceband* (300–3000 Hz)

*wideband* (over 3000 Hz)

*See also* band-limited channel, channel coding theorem (for Shannon–Hartley law), Nyquist's criterion.

2. *See* band matrix.

**bank switching** A technique for \*memory management commonly used in microcomputer systems that require more memory than the microprocessor can directly address. In a bank-switched system, different *banks* of memory are selected by writing different bit patterns to a specified output port. Bank switching is similar in concept to memory segmentation (*see* segment) but does not require the use of a processor that knows about a segmented address space.

**bar code (or barcode)** A printed machine-readable code that consists of parallel bars of varied width and spacing. The application most commonly observed is the coding on food and other goods that is read at the checkout and translated into a line of print on the bill showing product and cost. The information is also used to update stock records and provide sales statistics.

In the US the code used for this purpose is the *Universal Product Code (UPC)* and in Europe it is the *European Article Numbering (EAN) code*. The UPC decodes initially into two five-digit numbers. The first five identify the supplier and the next five are the item number within that supplier's range of goods. From this information the checkout terminal can access the details to be printed on the bill. The EAN code has a two-digit number to indicate country of origin, then the two five-digit numbers, followed by a check digit. The EAN arrangement simplifies the allocation of codes to suppliers. Only the two-digit code and the format need to be agreed internationally.

Other codes are used for shop-floor data collection, library systems, and monitoring the circulation of confidential documents. The advantage of bar codes is that they can be produced and read by relatively simple