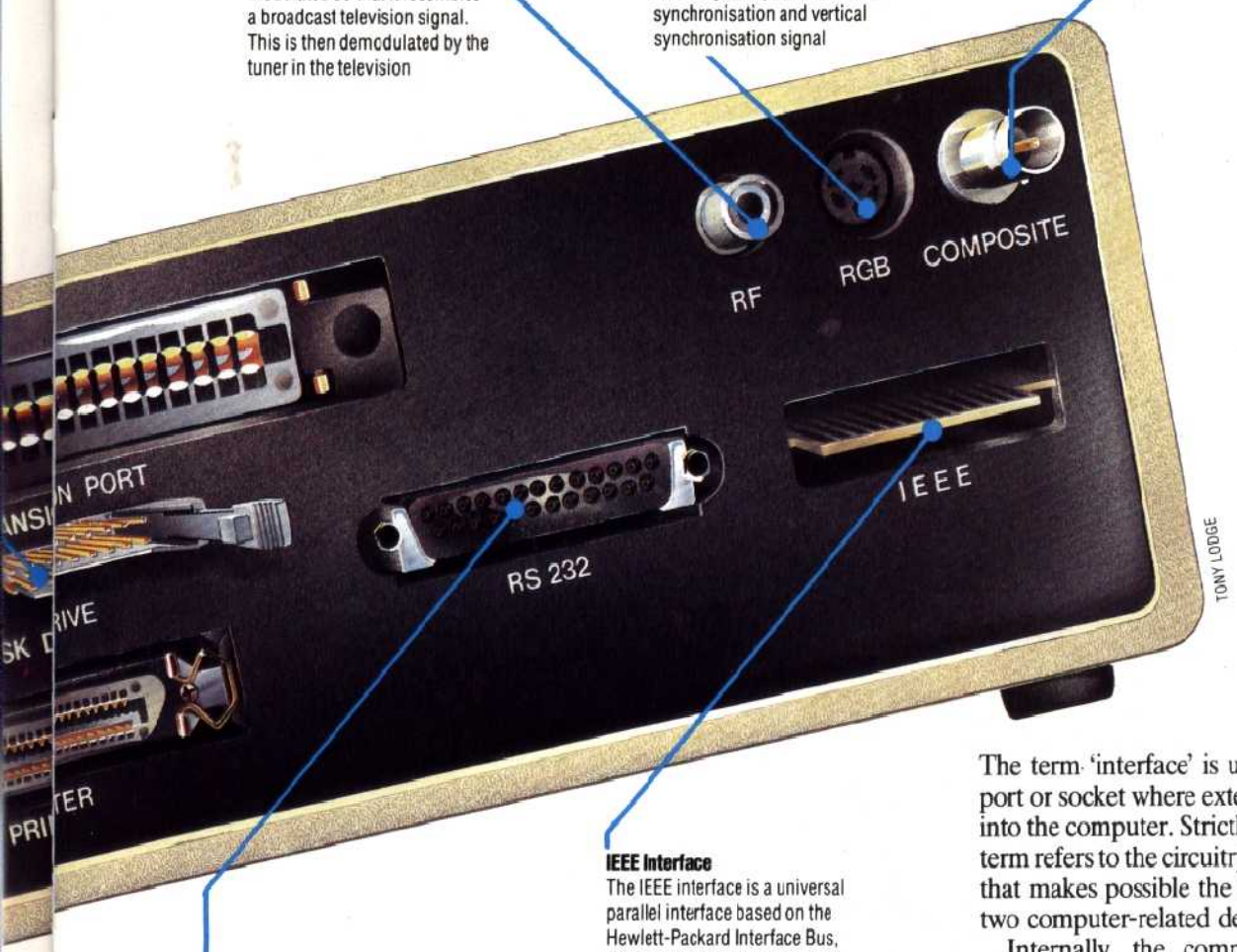
**Video Interface (RF)**
All home computers are designed to be connected to a video display unit and for most this means a domestic black and white or colour television set. If the ordinary aerial input socket of the television is to be used, the video signal must first be RF (radio frequency) modulated so that it resembles a broadcast television signal. This is then demodulated by the tuner in the television

**RGB Interface**
Even better results are possible if the elements needed by the video monitor are kept separate. The RGB interface provides separate red, green and blue video signals, plus a horizontal synchronisation and vertical synchronisation signal

**Video Interface (Composite)**
Some televisions and many video monitors incorporate a composite or 'video' input that by-passes the RF demodulating stage, enabling better-quality pictures to be produced. All the elements of a standard video signal (chrominance, luminance, synchronisation signals, etc.) are present in the computer's output but this 'composite' signal does not need to be further modulated for processing by the television tuner

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**Serial Interface**
Unlike many interfaces, the RS232 serial interface is theoretically precisely defined in a standard of the Electrical Industries Association. This standard specifies the type of connector to be used (a 25-pin 'miniature D' connector), the signals allocated to each pin, and the signal levels. Unfortunately, few manufacturers stick to the standard, and making serial devices work with a given computer can be difficult. Of the many pins present on the standard interface, usually only three are used: pin 2 to transmit serial data from the computer to the peripheral device; pin 3 to receive data transmitted from the peripheral device; and pin 7, the ground (earth) signal. Both transmitting and receiving devices need to be set so that the rate of data transmission and the format of the transmitted data are the same

**IEEE Interface**
The IEEE interface is a universal parallel interface based on the Hewlett-Packard Interface Bus, and now adopted as a standard by the Institute of Electrical and Electronics Engineers. The standard is well defined, both physically and electrically. Unlike other data interfaces (e.g., Centronics parallel and RS232 serial), which can connect only to one peripheral device at a time, the IEEE bus can connect up to 15 instruments (including the computer itself) simultaneously. Devices incorporating IEEE interfaces include printers, floppy disk drives, plotters, signal generators, voltmeters and other test equipment. Because it lends itself so well to use with test and measuring equipment, the IEEE bus is much favoured for use in laboratories and industrial establishments. At present only a few home computers offer an IEEE interface and some of these use a printed circuit board edge-connector instead of the standard IEEE connector

The term 'interface' is used loosely to mean the port or socket where external devices are plugged into the computer. Strictly speaking, however, the term refers to the circuitry and associated software that makes possible the connection between any two computer-related devices.

Internally, the computer communicates by sending data over 'busses' — sets of parallel conductors, each of which conducts a single binary signal. In most microcomputers there are three internal busses: an eight-bit data bus, a 16-bit address bus, and a control bus with, usually, signals consisting of between five and 12 bits that indicate the current condition of the CPU. Some of the control signals advise memory and peripheral devices whether the CPU wishes to retrieve data (read) or to deposit data (write). Others convey information from the outside into the CPU, informing it, for example, that a peripheral device has some data to input and requires attention.

Internally, the computer generally handles information consisting of either eight bits or 16 bits at a time. Thus, if the CPU wants to retrieve the data in memory location 65535 (or FFFF, expressed in hexadecimal) it will set all 16 wires of the address bus to one to identify that location. If the contents of this memory location happen to be 182 (B6 in hexadecimal), this data will be placed on the data bus as the eight binary digits 10110110.

When data is transferred like this, eight or 16 bits at a time, the transfer is said to be 'parallel'.