



TELEPHONE EXCHANGE



The Tone Of Command

Developed originally to connect remote terminals to mainframe computers, the modem ('MOdulator-DEModulator') converts, or modulates, digital electronic data into audio tones for telephone transmission, and demodulates audio tones back into digital signals on reception. Acoustic couplers transmit and receive via the telephone handset, while 'hard-wired' modems are connected directly to the line — usually through an extension socket

'Communications' is a term that covers any form of data transfer from one computer to another. In general, however, it's used to describe the process of sending information via the public telephone network. We begin a series of articles in which we explore in detail how the process works and the practical applications of this technology.

Connecting your micro to a modem allows it to talk to other computers over the telephone. A wide range of communications activities is then possible. You can send letters, which are received the instant they are transmitted, swap software with friends in distant places, exchange public messages with other computer users or gain access to a mainframe computer. We will discuss these applications in a later article. Here, we take a look at the principles behind data transmission between computers.

Communications technology (also known as 'comms') has its origins in mainframe computing.

In the past, a typical mainframe configuration placed the computer in a purpose-built, air-conditioned room, from which connections were made with terminals scattered around the building. A terminal was simply a screen and keyboard connected to the main computer via a serial cable. Thus, a user could sit at a terminal at one end of a building and access the computer at the other end.

A direct serial link between the computer and terminal worked well over relatively short distances — that is, up to a few hundred metres — but signal deterioration ruled out longer distances, even if the cost of the cabling didn't. It was for this reason that the modem was developed.

A 'modem' — from '*modulator/demodulator*' — is a device that allows computer data to be transmitted along an ordinary telephone line. It works by turning electrical signals from the computer into audio tones of a frequency and volume suitable for transmission through the telephone network. This process is known as 'modulation'. The receiving computer's modem