PERFORMANCE BOOSTER

The Acorn Electron was originally developed to provide some of the features offered by the BBC Micro at a lower price. However, the machine lacks many facilities required by the home user. The new Electron Plus 1 interface, priced at £60, can transform a standard Electron machine into a low-cost alternative to the BBC Micro.

The Electron was conceived as a scaled-down version of the BBC Micro. Its designers retained the excellent BBC BASIC and operating system, but dispensed with most of the interfaces that make the BBC Micro so versatile. In fact, the Electron's only connections are a cassette port, two monitor sockets (RGB or composite video), a modulator output for connection to a television, and a power socket.

The Plus 1 interface adds to the standard machine a parallel printer port, a joystick socket and two sockets for plug-in ROM cartridges. Acorn hopes that the extra facilities will increase sales potential. The cartridge slots and joystick port allow the Electron to be used for arcade-style games, while the printer port is a useful feature for the user who needs to be able to print out program listings, or who wishes to use word processing software.

Installation of the Plus 1 expansion unit is very easy: it simply pushes onto the edge connector that protrudes from the rear of the Electron. Two bolts are then pushed through the Plus 1 casing and attached to the threaded sockets in the Electron casing. All power and data are transferred via the edge connector. The extra software needed to 'drive' the new interface is held in a ROM chip inside the unit.

The printer port is a standard Centronics parallel type. To enable the printer, the user must type the command VDU2, and to disable it, VDU3 must be entered. These commands are identical to those used on the BBC Micro. Similarly, VDU1 is used to send a character to the printer; again this is standard BBC BASIC.

Joysticks are plugged into the analogue port. This is a 15-pin D-type socket, and pin connections are identical to those on the BBC Micro's analogue port, allowing any BBC-compatible joystick to be used. The Plus 1 can measure up to four analogue voltages, either from four games paddles or from two joysticks (each joystick produces two voltages: one for up/down movement, the other for left and right).

The process of converting analogue voltages into digital signals that can be handled by the computer is performed by an analogue-to-digital converter chip — in this case, an ADC0844. This is a less complex chip than the one used in the BBC Micro, which means that the Electron does not follow the movement of a joystick as accurately as a BBC machine does. In games programs, where the joystick is used simply as a four-way switch, this is not a problem. If the joystick is used with a graphics program — to draw 'freehand' on the screen, for example — movement is noticeably jerky on the Electron and the resulting picture is less detailed.

When the Electron Plus 1 is first switched on, the cartridge in the front ROM socket starts running automatically — to stop it, Escape must be pressed. The ROM filing system works very much like the cassette version (it's much faster, though), so commands like *CAT, LOAD and CHAIN are understood. To use cassette software with the new unit, you must enter the command *TAPE or remove the cartridge, remembering to switch the power off first. In addition to games programs, other languages will also be produced in cartridge form. Unlike the games ROMs, these language ROMs are 'switched in' to replace the usual BASIC ROM.

The problem with most computer add-ons is that they often have unwanted side-effects. When the Plus 1 unit is connected to the Electron, loading errors may result when cassette programs are used. This is especially true for programs that contain data files — we found that two of the programs on the Electron's introductory cassette

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Room For Expansion
The Electron was originally conceived as a cut-down version of the BBC Micro. It lacks almost all of the BBC's many interfaces, yet still offers the same excellent graphics and BASIC at half the price. Now Acorn has produced a unit known as the Plus 1, which gives the Electron the most important interfaces for £60