

# MONITORS... for Home Computers

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PART TWO

THIS month we complete our brief look at monitors for home computers by reviewing two current models. The two units tested are representative of the most popular types of monitor for home computing: a high resolution monochrome monitor, and a medium resolution RGB monitor. The monitors have been reviewed primarily from a user's viewpoint, and the usual technical tests have been largely replaced by an extended practical evaluation with a BBC Micro.

## NOVEX MONOCHROME MONITOR

**First Impressions** The Novex 12/800 is a transistorised custom-designed monochrome monitor from Taiwan. It comes well packed, and is supplied complete with a manual and a phono-to-phono lead. The manual, although rather quaintly worded in places, is well illustrated and provides all of the necessary information.

The unit has a 12-inch green (P31) phosphor display tube, and is attractively packaged in a two-tone beige and brown steel case measuring approximately 30x29x30cm. The colour scheme and styling are pleasing to the eye, and are a good match for Apple or BBC computers. The tube has a moulded surround which includes an illuminated mains switch and a door concealing a number of controls. The monitor weighs approximately 8kg, and is mounted on rubber feet. The video connectors, mains lead and two slide switches are located on the rear panel.

**Front Panel** The screen surround includes the illuminated mains switch, and a button to release the door concealing the preset adjustments and controls. The two screwdriver preset adjustments are for picture height and width. These are factory adjusted for optimum setting, and should therefore need little or no attention. The remaining controls are intended for user adjustment and allow setting of brightness, contrast, horizontal hold, and vertical hold. All of the presets and controls are clearly labelled.

The four controls all have a useful range of adjustment. Correct setting of the two hold controls is well described in the manual. The adjustment of contrast and brightness is not quite so well covered in the manual. The best way to perform the adjustment was easily found to be as follows. Both controls should be turned fully clockwise for the brightest possible picture; the raster should then be clearly visible. Next the brightness is reduced until the raster just disappears. Finally the contrast should be adjusted to produce an acceptable picture; the actual setting here is a matter of personal preference. Once set, little adjustment to any of the controls is necessary, and then usually only to take account of different ambient lighting conditions.

**Rear Panel** The mains power lead enters through a securing grommet on the monitor's rear panel. The length of this lead is a rather miserly 1.5 metres (in common, it must be said, with much other equipment); no plug is provided.

Also on the rear panel are two miniature slide switches and two phono sockets, all clearly labelled. The reviewers' first reaction to the use of phono sockets was to look around for a spare pair of BNC sockets to fit in their place, but this again is a matter of personal preference.

The video input signal is connected to one of the phono sockets, and the second socket is internally connected to the input socket. This provides a video output signal which is useful for loop-through connection to more than one monitor. In order to be able to obtain the maximum video bandwidth, the video signal should be terminated (by 75 ohms) at the last monitor in the chain. A switch is provided to allow the signal to be left unterminated (high impedance for an intermediate unit), or terminated in 75 ohms (for the last or only monitor). In practice, the two phono sockets are interchangeable, and are labelled merely for convenience.

The second slide switch on the rear panel is labelled 'GRAPHICS' and 'DATA'. This allows the monitor's performance to be separately optimised for high resolution graphics and 80-column text.

**Inside The Case** On the rear of the case is a removable panel bearing warnings of electrical shock risk, and advising of no user serviceable components. The internal construction is based on a large single-sided p.c.b. which is securely mounted on the base plate. This contains the majority of the components, and is screen printed for ease of component identification. Mounted on the base of the tube is a much smaller p.c.b. which carries the video amplifier. This is a common practice to minimise stray capacitance, and hence allow the maximum video bandwidth to be retained.

The internal construction is very compact, and represents a utilitarian appearance in interesting contrast to the external styling. The unit is clearly a custom designed monitor, rather than a modified television chassis. The power supply incorporates a mains transformer, and has no provision for operation from an external 12 volt d.c. supply.

Looking inside the case from the rear, there are three



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preset controls mounted on the edge of the main circuit board. These turn out to be (left to right): picture height, focus and black level adjustments. These are factory presets which are not intended for user adjustment.

**Picture Quality** In order to evaluate the picture quality, the monitor was connected to the video output of a BBC Micro. Tests were conducted using 20, 40 and 80-column text, and high resolution coloured graphics displays. The video signal was terminated by 75 ohms.

After using a black and white television, the first thing that strikes the user is the clarity of the display. The difference between the display on a monochrome television, and the display on the monitor, has to be seen to be believed. In fact going back to the television display after a number of hours of use with the monitor can cause acute frustration. The temptation is to keep trying to adjust the television tuning to regain the 'lost' definition; a substantially fruitless exercise. It is on 80-column displays, however, that the difference is most apparent. The test is easily readable on the monitor, whereas on a television display, prolonged viewing is tiring.

The other factor which is quite noticeable is that the green phosphor has a significantly longer persistence than the white phosphor. This is quite typical of the P31 phosphor, and probably contributes to the strain-free display which can happily be viewed for many hours.

In 80-column mode the use of the 'graphics/data' switch eventually becomes clear. When switching from 'graphics' to 'data', very close observation of the screen shows that the leading edges of all characters become very slightly emphasised. This does not have any noticeable effect except on a very narrow vertical line (e.g. the centre upright of 'W'), which then becomes more clearly visible. Such lines represent very high video frequencies, and often result in a slightly fainter display, although remaining quite visible. The 'data' position appears to compensate for this effect by altering the time constant of the video amplifier to induce slight ringing. The end result is to allow the display of 80-column text to be outstandingly clear, but without compromising very high resolution graphics displays.

The overall display shows good linearity in both horizontal and vertical directions. There is no evidence of power supply problems with the display brightness, and the unit runs cool even after many hours of use. The picture focus is generally excellent, with only slight defocussing evident in the top right corner of the display. This would normally go unnoticed in everyday use. The display resolution is quoted at 1000 lines in the screen centre, and 800 lines in the corner. This is more than adequate for 80-column text, and in practice individual pixels can be distinguished (the BBC Micro uses 640 pixels per line in 80-column text mode).

The BBC Micro produces displays in up to eight colours, although black is not really a colour as such. When displayed on the Novex monitor, these colours appear as shades of green, but they are still distinguishable by virtue of their different brightness levels. In order of decreasing brightness, the colours appear as:—

WHITE	(Brightest)
YELLOW	
CYAN	
GREEN	
MAGENTA	
RED	
BLUE	
(BLACK)	(Darkest)

As delivered, the review unit was unable to display blue at all, and had some difficulty with red. However, after adjustment of the black level internal preset (not a user adjustment), all of the colours were visible and distinguishable.

**VERDICT** The overall impression after prolonged use (including preparing this review!) is excellent. The monitor is neat, compact, pleasant to use and fuss-free. It is ideal for word processing and any high resolution applications, and would make a very welcome addition to any home computer system.

**The Novex 12/800 is priced at £75.62 excluding VAT and p&p and is available from Display Distribution Limited, 35 Grosvenor Road, Twickenham, Middlesex (01-891 1923).**

