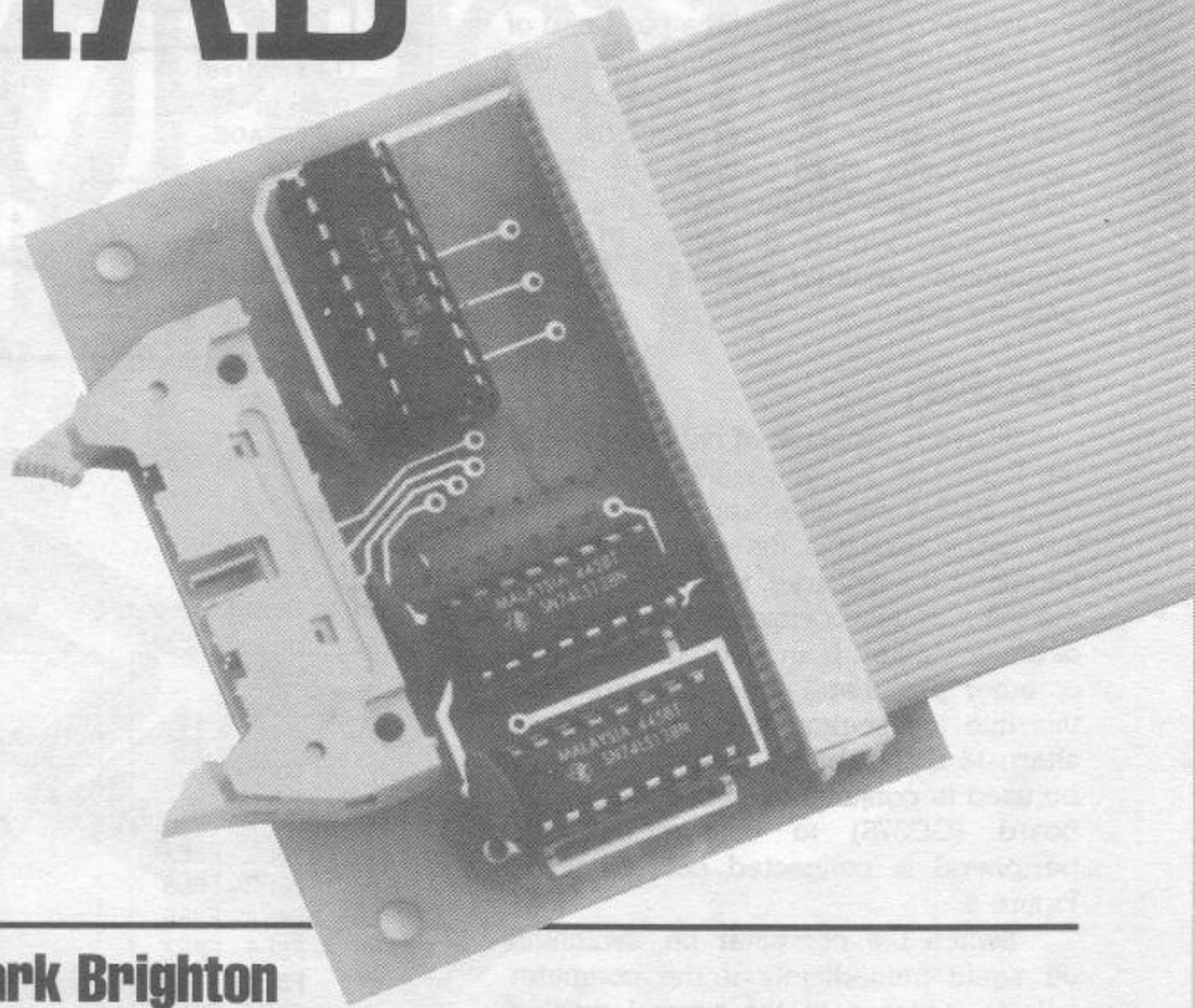# AMSTRAD 8 BIT INPUT PORT

by Mark Brighton

This article describes a simple 8-bit input port which plugs into the expansion connector on the rear of the Amstrad CPC 464/664/6128 range of computers and allows information from the outside world to be read and stored by the computer. It may be used, for example, to interface the weather satellite decoder described elsewhere in this issue with the Amstrad computers.

★ **Inexpensive - Easy to Build and Fit**
★ **Compatible with BBC User Port Socket**

Circuit Description

In Figure 1, IC1 decodes $\overline{IORQ}$ and A5 - A7 to produce $\overline{IOSEL}$, which is active for any valid external I/O address, enabling IC2 when $\overline{RD}$ is active and A4 is high.

This locates the port within the second block of 16 addresses in the valid external I/O area starting at $F8E0, although the constraints imposed on the design complexity by the low cost specification precluded complete address decoding, so there are 'ghost images' of the port in the other I/O areas. For this reason, the port address may also be located at any two addresses within the block of sixteen by fitting one of the eight links as shown in Table 1.

By carefully choosing the link required, it should be possible to avoid overlapping the port with any other external I/O mapped device used within the system.

Finally, IC3, when enabled via the link fitted, gates any data present on P_0 - P_7 onto the data bus to be read by the processor.

Construction

Referring to the Parts List and the legend, as shown in Figure 2, fit and solder the IC sockets, ensuring that the notch on each socket aligns with the legend. Locate and solder the three
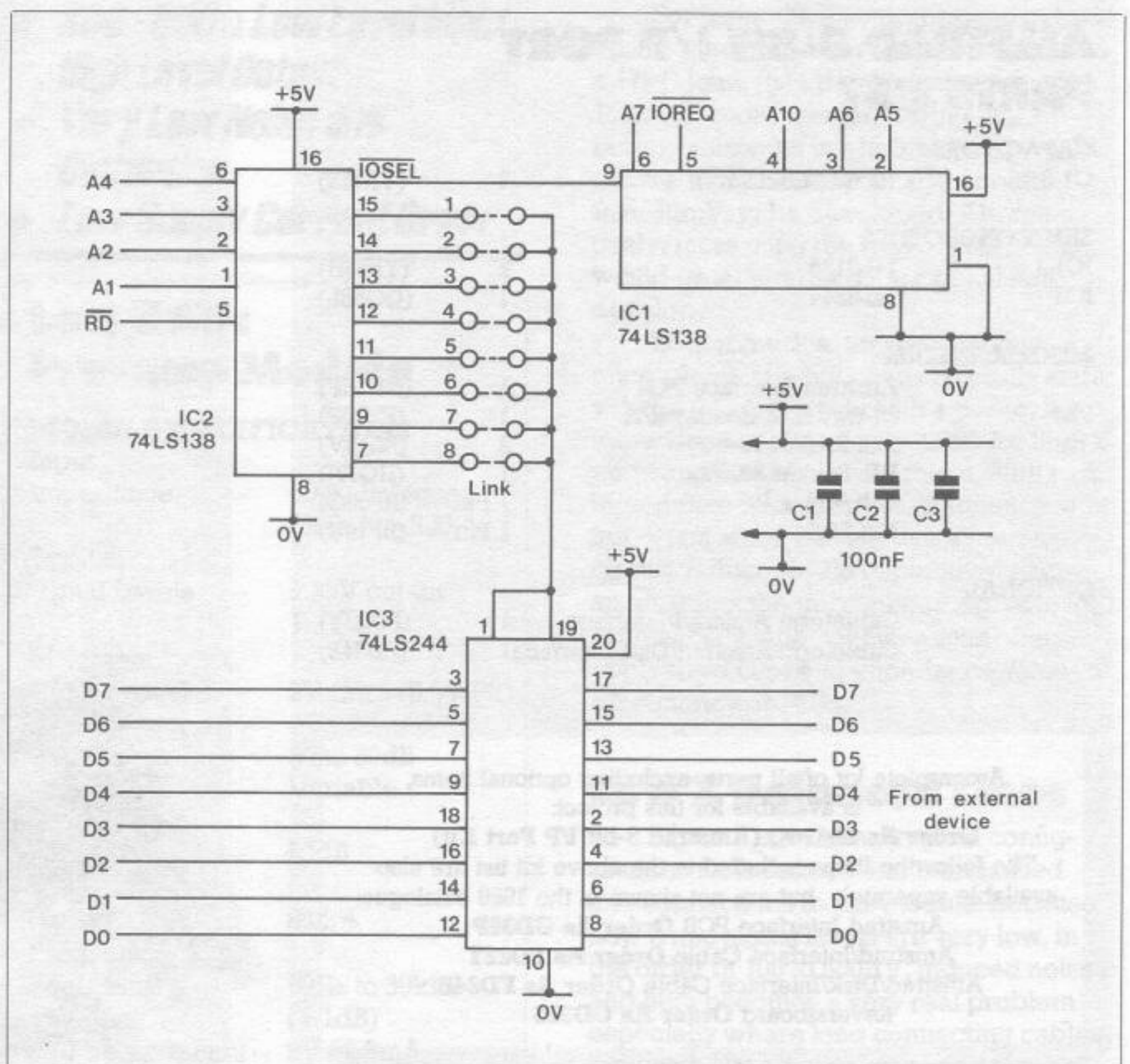

Figure 1. Circuit Diagram.

0.1μF decoupling capacitors. Then fit PL1 and the IDC cable of your choice, with the stripe on the cable at the pin 1 end of the legend! Lastly, fit the link previously selected from Table 1, and proceed to solder all connections and check the PCB for dry joints, short circuits, etc. Fit all IC's into their sockets, noting correct orientation. Figure 3 shows PL1 pin connections looking into the connector, onto the pins.

Testing

There is a choice of cables given in the Parts List, but you will probably use cable FD22Y for most applications. Plug the IDC cable into the expansion connector on the Amstrad, with the stripe on the left side when viewed from the *front* of the computer. If an external disk drive or other peripheral is to be used, plug this into the socket mid-way along the alternate IDC cable (FD24B) which must be used in conjunction with our Reversiboard (GD37S) to ensure that the peripheral is connected correctly, see Figure 4.

Switch the computer on, switching off again immediately if the computer fails to initialise in the normal way of displaying the 'ready' prompt.

If all is well, reading the address chosen with an 'INP' command should return the number set-up on the port inputs (if nothing is connected to the port, 255 will be read).
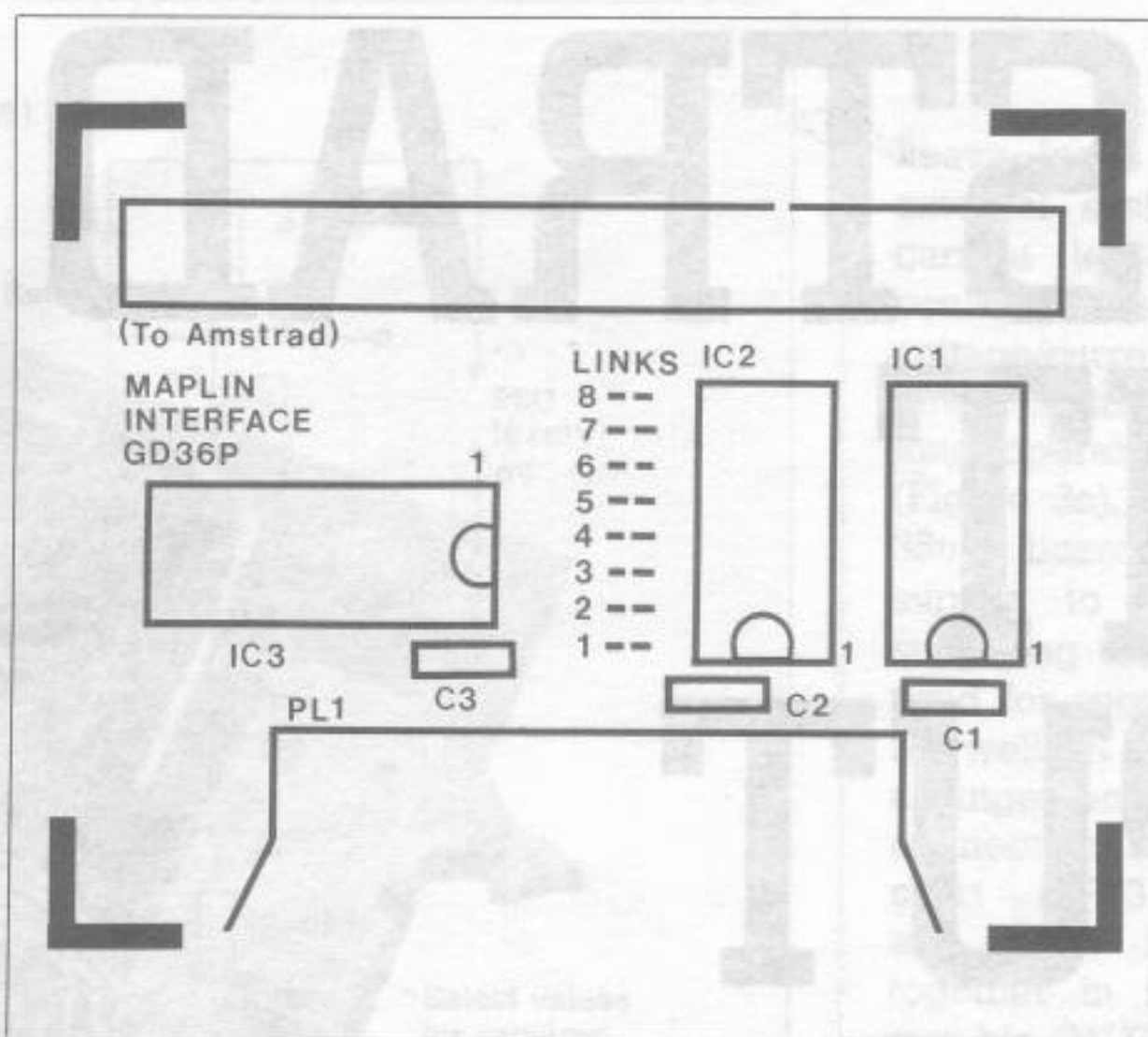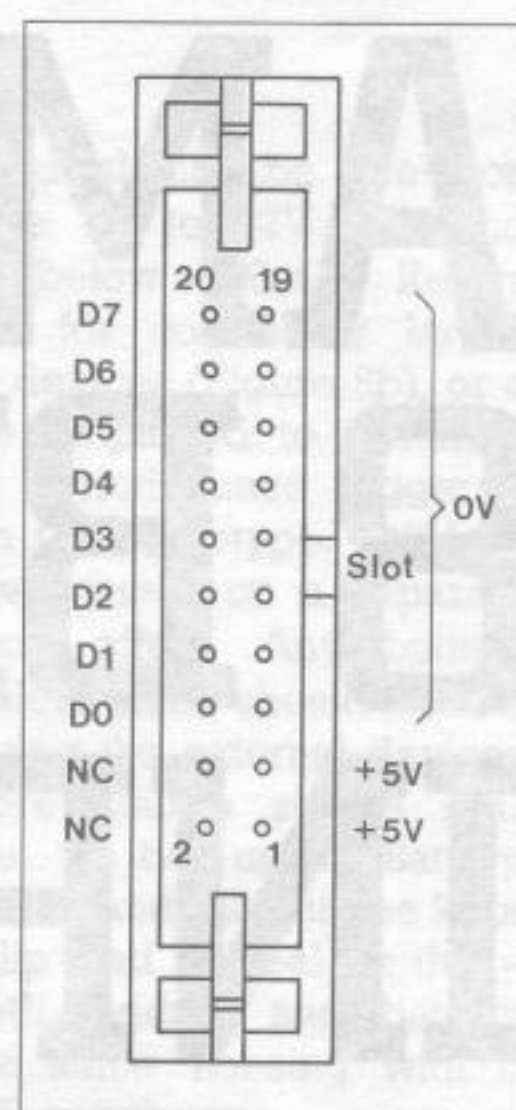

Figure 2. Board Layout.

Figure 3. Header Plug.

LINK	ADDRESS
1	F8E0 - F8E1
2	F8E2 - F8E3
3	F8E4 - F8E5
4	F8E6 - F8E7
5	F8E8 - F8E9
6	F8EA - F8EB
7	F8EC - F8ED
8	F8EE - F8EF

Table 1.
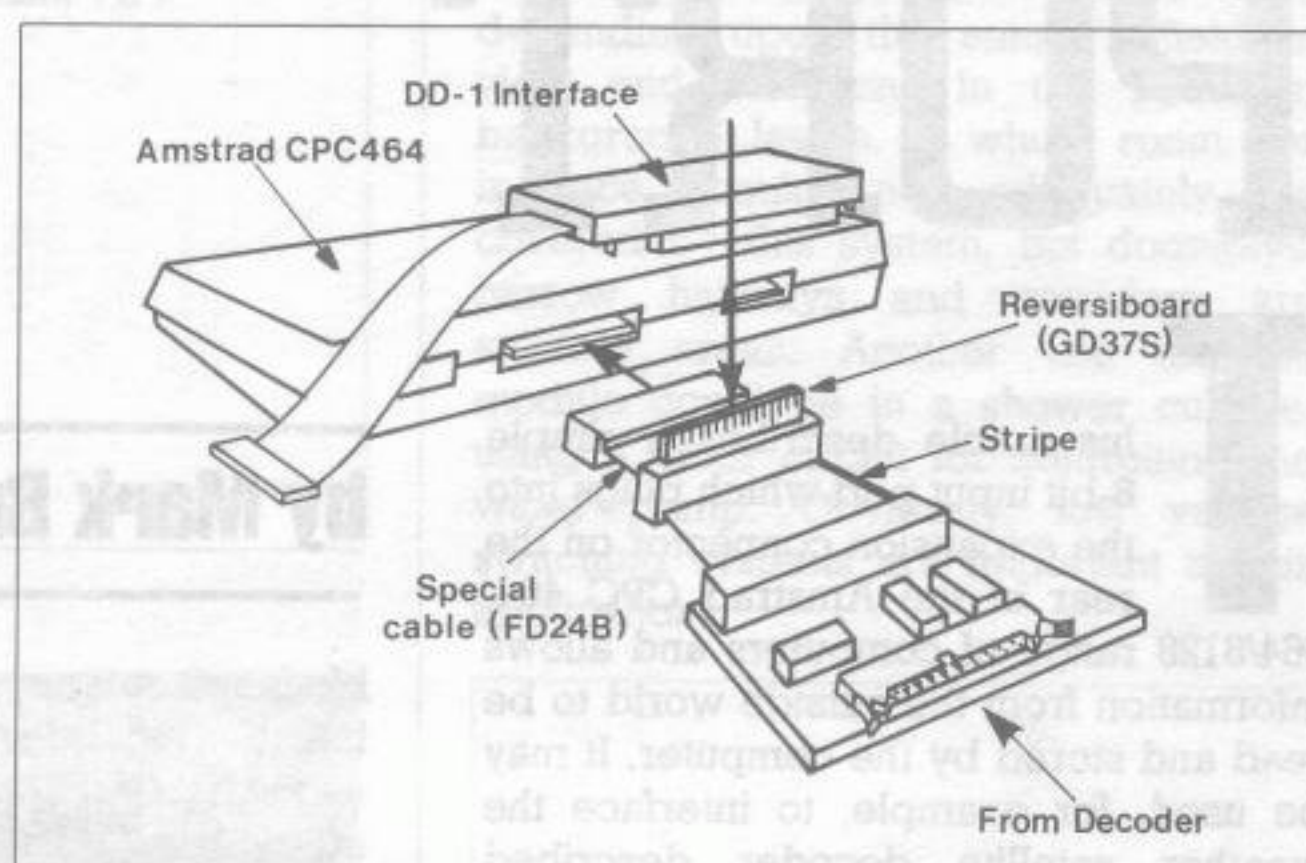
Figure 4. Alternate cable.

AMSTRAD 8-BIT I/P PORT PARTS LIST

CAPACITORS			
C1-3	100nF Minidisc	3	(YR75S)

SEMICONDUCTORS			
IC1,2	74LS138	2	(YF53H)
IC3	74LS244	1	(QQ56L)

MISCELLANEOUS			
	Amstrad Interface PCB	1	(GD36P)
PL1	20-way IDC Header R/A	1	(FT72P)
	DIL Socket 16-way	2	(BL19V)
	DIL Socket 20-way	1	(HQ77J)
	Bolt 6BA x ½"	1 Pkt	(BF06G)
	Nut 6BA	1 Pkt	(BF18U)

OPTIONAL			
	Cableform Amstrad/Interface	1	(FD22Y)
	Cableform Amstrad/Disc/Interface	1	(FD24B)

A complete kit of all parts, excluding optional items,
is available for this project:
Order As LM14Q (Amstrad 8-bit I/P Port Kit)
The following items included in the above kit list are also
available separately, but are not shown in the 1986 catalogue:
Amstrad Interface PCB **Order As GD36P**
Amstrad/Interface Cable **Order As FD22Y**
Amstrad/Disk/Interface Cable **Order As FD24B**
Reversiboard **Order As GD37S**