

NEXUS

**Interface Cards
for Archimedes computers
Installation Instructions and User Guide**

**Issue 1
January 1993**



**SJ RESEARCH LIMITED
J1 THE PADDOCKS
347 CHERRY HINTON ROAD
CAMBRIDGE CB1 4DH**

**TELEPHONE 0223 416715
TECHNICAL SUPPORT 0223 414532
FAX 0223 416440**

Copyright © SJ Research Limited, 1993.

Whilst copyright in this document is reserved by SJ Research Ltd., permission is hereby given to owners of SJ Research Nexus Disc Servers to make copies of sections of this manual for their own use, and for the use of their pupils or colleagues, provided that this copyright notice appears in all such copies.

The sale of such copies is expressly forbidden without explicit written permission from SJ Research Ltd.

SJ Research has a policy of continual improvement. Minor changes to the products described in this manual may be described on an insert sheet supplied with this manual, but information in this manual may not apply to later issues of Nexus interface cards. If you are in any doubt whether this manual applies to the cards you have then please contact the Technical Support desk at SJ Research, quoting the type and serial number(s) of your card(s) and the version number of the ROM on the card(s).

Disclaimer

While every care has been taken in the preparation of this manual, SJ Research assumes no responsibility for errors or omissions, neither is any liability assumed for damages resulting from the use of the information contained herein.

All goods and services provided by SJ Research Ltd. are subject to the company's Terms and Conditions of Sale. A copy of such terms is available on request and such standard terms shall apply on and from the date of actual commencement of such service or the provision of goods.

Nexus is a trademark of SJ Research Limited.

Econet is a trademark of Acorn Computers Limited.

Concept Keyboard is a trademark of The Concept Keyboard Company Limited

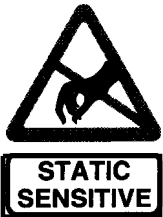
Important Notice

These instructions should be read in conjunction with the instructions supplied with your Acorn RISC OS computer, where you will find details of how to open the case of your computer. Take care to follow any safety instructions included in the instructions for your computer.

Safety Notice

Before opening the case of your computer, you must disconnect it from the mains.

IMPORTANT WARNING!



Nexus Interface cards include static sensitive components

Do not remove the card from its wrapping until necessary.

Retain the anti-static bubble wrap packaging for future use.

When handling, observe anti-static precautions; as a minimum:-

- Avoid touching components' pins; hold card by the metalwork (if fitted) or by the edge of the board whenever possible.
- Avoid working on nylon or similar synthetic carpet.
- Discharge yourself to a good earth, such as a metal water pipe, before handling the card .
- Disconnect the computer from the mains before inserting or removing

First published January 1993

Published by SJ Research Limited

Contents / List of Nexus Interface Cards and their applicability

	Page
Important Notice	1
Safety Notice	1
Interface Cards (Product Code) and their applicability	
A3000 Interface Card (A3INN01)	2
<i>Recommended for: A3000</i>	
<i>Can also be used for: AA 3010, A3020 / A4000 (fits in the podule expansion slot)</i>	
A3000 User Port Interface Card (A3UIN01)	2
<i>Additional information</i>	
<i>Recommended for: A3000</i>	
<i>Can also be used for: AA 3010, A3020 / A4000 (fits in the podule expansion slot)</i>	
A5000/540/4x0/310 Interface Card (34INN01)	4
<i>Recommended for: A310, A410, A420, A440, A5000, A540</i>	
<i>Can also be used for: A3000 (using the external expansion slot)</i>	
A3020/A4000 Interface Card (A324N01)	5
<i>Recommended for: A3020, A4000; fits in the Network expansion slot</i>	
<i>Not suitable for any other computer</i>	

Applicability

These instructions also apply to all Nexus interface cards supplied prior to January 1993, but see the notes in the *Nexus Disc Server Manual* concerning ROM versions. The Nexus Fast Interface Card supplied up to the end of 1992 is simply a Nexus User Port Interface Card with the User Port circuitry omitted.

Installing Nexus Interface Cards

You may wish to have your Nexus interface cards fitted by an authorised dealer. In this case take your computer (in original packaging if possible), the interface card and these instructions to the dealer; a charge is likely to be made for this service. Alternatively, you may choose to fit the cards yourself, following the instructions in this manual. **Please note the Safety Notice on page i of this manual, and any safety instructions in the manual for your computer.**

Packing Information

All Nexus interface cards are supplied with an appropriate 2m drop lead for connection to a Router, Connecting Box or Nexus extension lead. In addition:

A5000/540/4x0/310 Interface Cards (34INN01) are supplied with a "T" piece, podule slot blanking plate, two spacers and two screws.

A3000 Interface Cards (both versions) (A3INN01, A3UIN01) are supplied with two screws. These are only required if the card is mounted in the "standard" podule slot in an A3020/A4000 computer.

A3020/A4000 Interface Cards are supplied with an adhesive label to go above the network connector on the computer's case.

Note: Nexus connector standard

All Nexus interface cards are now supplied with 4 pin mini-DIN sockets. If your site still has any interface cards with the older 8 pin mini-DIN connectors please contact the Technical Support Desk at SJ Research to arrange to return your old cards and connecting leads for free of charge upgrade to the new standard.

A3000 Interface Cards (all versions)

A3000 Interface card versions

There are two versions of Nexus interface cards currently available for the A3000 computer, as follows:

A3000 Interface Card (A3INN01)

A3000 User Port Interface Card (A3UIN01)

The information given in this section relates to both card versions; additional information on the User Port card (including how it differs from the "standard" version) is given in the next section.

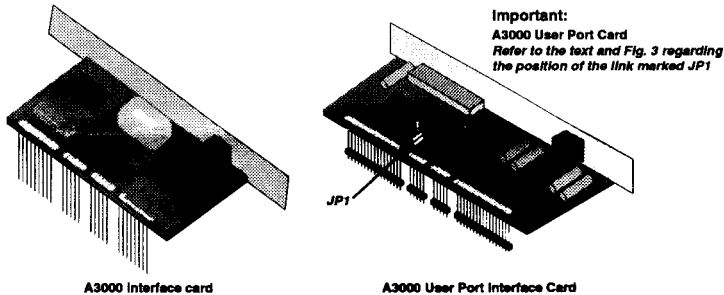


Figure 1: A3000 Interface Card versions

Applicability

The A3000 Interface Cards fit in the internal podule (expansion) slot in the A3000 computer. They can also be installed in the "standard" podule slot in an A3010, A3020 or A4000 computer - see the notes in the section on the *A3020/A4000 Interface Card* regarding the choice of interface card for these computers.

It is possible to fit an A5000/540/4x0/310 Interface Card (34INN01) to the **external** interface slot of an A3000 computer, either in addition to or instead of fitting an internal A3000 cards. This option is discussed in the section on the *A5000/54014x0/310 Interface Card*.

Installation

Disconnect the computer from the mains, open its case and remove the podule blanking piece (or pieces on the A3010/A3020/A4000) from the outer case - refer to the instruction supplied with the computer. **Retain the blanking pieces for future use.**

Installation is easiest with the computer the right way up on a firm surface with the keyboard towards you. Carefully line up the pins of the interface card with the socket on the computer's main circuit board (on A3010/A3020/A4000 computers you must take particular care to locate the correct row of sockets on the board - they are the ones marked "*Podule Card sockets - DO NOT USE for A324N01*" in Figure 7). In lining up the pins with their sockets you will normally need to tilt the board towards you, so that the board's metalwork is above the metalwork at the rear of the computer. Use your thumbs to maintain a firm pressure above the pins on the interface card. As you push the interface card down with your thumbs, use your fingers to rotate the card slightly into the required horizontal position. With the A3000 and A4000 use the screws which previously held the blanking plate in place to secure the interface card; with the A3020 use the screws provided with the interface card. (Refer to Figure 2 for the orientation of the interface card metalwork, the metal screening case and the outer plastic case on the A3020. Note that depending on the assembly tolerances of the A3020 a small spacer -

not supplied — may be desirable to avoid distorting the plastic case as this screw is tightened.)

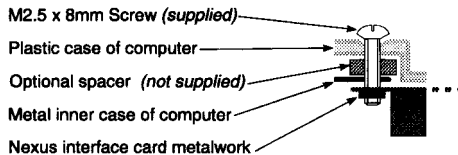


Figure 2: Fitting a Nexus A3000 card into an A3010 / A3020 / A4000 computer

Safety Checks

- The screws securing the interface card's back panel to the computer back panel **MUST** be fitted and checked to ensure that they are tight.
- There is a short earth lead at the far left back corner of the main circuit board of the A3000 computer. Occasionally this may be dislodged in the process of fitting a podule card. **Ensure that the tag on the end of this lead is pushed onto the lug provided on the computer's power supply.** (In some cases the lug is on the power supply circuit board; in others, where the power supply is enclosed in a metal case, it is integral with that case.)

A3000 User Port interface card (A3UIN01): Additional information

This card has a "standard" Acorn digital User Port and a Nexus interface on a single podule card. The User Port is required by peripherals such as the Concept Keyboard®, and this card provides a simple way of allowing both interfaces to be fitted to an A3000 computer.

The User Port card uses a different Nexus interface circuit from the "standard" A3000 Nexus card; in some circumstances this will give improved performance, although the effect is not very significant with current version of software. However, the Nexus boot sequence has to load different software when a computer is fitted with a User Port card — refer to the *Nexus Disc Server Manual* for more information.

Installation - Additional

A single jumper link, JP1, is fitted on the circuit board. A shorting link should be fitted between the two pins closest to the centre of the card (i.e. closest to the metalwork) — see *Figure 1* and *Figure 3*. Check that this link is in place and in the correct position. *[The link JP1 selects the rate at which the card transfers data; the above setting selects the standard rate of 20MHz. Other settings should only have been used on explicit instructions from SJ Research. Note that the initial release of Nexus Networking does not support transfer rates other than 20MHz, and future releases are unlikely to do so. If you have any cards with the link set other than as described then please contact the Technical Support Desk at SJ Research as soon as possible.]*

Operation

The User Port card incorporates circuitry designed to protect it against a number of potentially damaging events such as mains earth faults (some of which are particularly likely after extended periods of dry weather) and nearby lightning strikes. Whilst the card cannot be protected against all possible faults, it can be protected against the most common ones. This protection is provided on the Nexus and on the User Port circuits; there are four fuses on the circuit board that limit the energy into the the Nexus

circuitry during fault conditions, and a fifth fuse protecting the User Port circuitry. In the event of a fault, one or more of these fuses may blow and will have to be replaced. You **must** use fuses as specified below; see *Figure 3* for the fuse locations on the circuit board.

Fuse Specifications:

Card protection network	<i>Current Rating: 63mA at 250V</i>
User Port protection	<i>Current Rating: 500mA at 250V</i>
<i>Fusing characteristics as per IEC 127 Sheet 2 (Fast blow)</i>	

Warning: If testing the 63mA fuses with a multimeter the current used by the meter may be sufficient to blow the fuse! Check the meter's specification before use.

DO NOT replace these fuses by those of any other specification as to do so will leave the board, and possibly the computer, open to potential damage and will void any warranty.

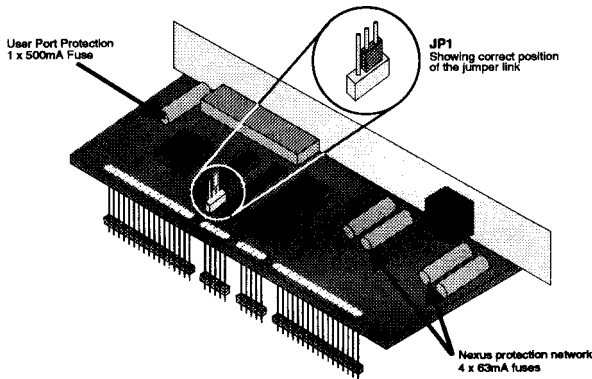


Figure 3: A3000 User Port Interface Card showing fuse positions and setting of jumper JP1

A5000/540/4x0/310 Interface Card (34INN01)

Applicability

This interface card is intended for internal installation in Acorn RISC. OS computers which are fitted with an internal backplane. These include the A400 series (A410, A420 and A440), the A540 and the A5000 computers. The card may also be used with A310 computers — but see the notes in the next section. It may also be used in the external podule slot on an A3000 computer, but note carefully the points made below.

Use in A310 computers

Before a Nexus interface (or any other podule) can be installed, a podule backplane will need to be fitted. These can be obtained from I.F.E.L., 36 Upland Drive, Plymouth, Devon, PL6 6BD; Tel: (0752) 847286 and should be installed in accordance with the instructions supplied with the backplane.

Use In the external podule slot of an A3000 computer

This card can also be used by plugging directly into the external podule slot of an A3000 computer. This will be necessary if you want to install another (non-Nexus) podule card in the A3000's internal expansion slot. Always turn off the power to the

computer before inserting or removing a card from the external podule slot. If you are installing a card in this slot other than on a temporary basis you **must** purchase an enclosure for the external card. These are available from a number of suppliers, including Watford Electronics and Morley Electronics.

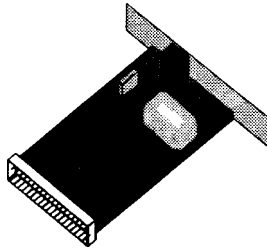


Figure 4: Nexus A5000/A540/A4x0/A310 Interface Card

Installation

Disconnect the computer from the mains and open its case, as described in the instructions for the computer. Remove one of the masking plates from the rear of the computer. Push the interface card firmly into one of the backplane podule slots. Use the supplied 'T' piece and half-width blanking plate to blank the opening in the back of the computer; note the additional spacer (supplied) is required for A310 computers only (see Figure 5).

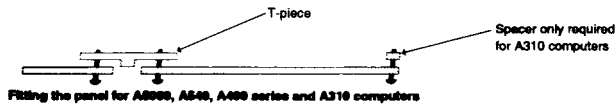


Figure 5: A5000/A540/A4x0/A310 Interface card mounting

A3020/A4000 Interface Card (A324N01)

Applicability

This interface card is only suitable for use with the A3020 and A4000 computers, where it fits into the network upgrade "slot". Before installing the card check the notes in the next section carefully to ensure that this card matches your needs. Note that there is no metalwork on this card; connection from the card to your Nexus system is via the 15 way 'D' type network connector provided on the back of the computer. The card is supplied with a 2m drop lead to link this connector to a "standard" Nexus mini-DIN socket; this drop lead is not suitable for use with any other Nexus interface card, nor with any other (non-Nexus) card for the A3020/A4000 computer.

Choice of Nexus interface cards for the A3010, A3020 and A4000 computers

These computers are all provided with a single A3000-type expansion slot. In addition the A3020 and A4000 computers are provided with a "general" network expansion slot, while the A3010 computer has two joystick ports. These are the only expansion facilities provided. In choosing the appropriate Nexus interface card for these computers you need to consider:-

- If you want a Nexus interface card for an A3010 computer you will have to use one of the A3000 Nexus Interface Cards described earlier; no further expansion of your computer will be possible.

- If you want to fit both Nexus and Econet interfaces to an A3020 or an A4000 computer then you will have to fit an Econet interface to the "general" network slot and one of the A3000 Nexus Interface Cards into the podule slot; no further expansion of your computer will be possible.
- In all other circumstances you are recommended to fit the A3020/A4000 Nexus interface card; this leaves the A3000-type podule slot free for another expansion card.

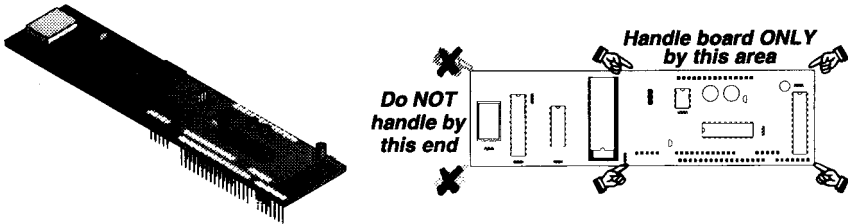


Figure 6: A3020 / A4000 Interface Card and handling precautions

Installation

Disconnect the computer from the mains and open its case, as described in the instructions provided with the computer. It will be easier to locate the interface card correctly if you also remove the blanking piece(s) provided for the podule slot. (If a card is already installed in the podule slot you will have to remove it carefully and replace it after installing the Nexus interface card.) Identify the correct sockets - take care not to attempt to use those provided for the podule slot (see Figure 7) - and carefully locate the board over them. Check that each pin is correctly aligned and push the board down firmly. Only push the board in the area above the pins - see handling warning on Figure 6. Check that all pins are aligned correctly and reassemble computer. Make sure you stick the **Nexus** label in place above the network socket on the back of the computer.

Note: The Nexus interface card is fitted with three pins to accommodate jumper links; **no links should be fitted** with the current ROM release.

When inserting/removing the board, to avoid physical damage ensure you only handle it by the "safe" area indicated in Figure 6 - never by the area beyond the pins. The best way to remove the board is to alternately ease upwards the two ends of the "safe" area.

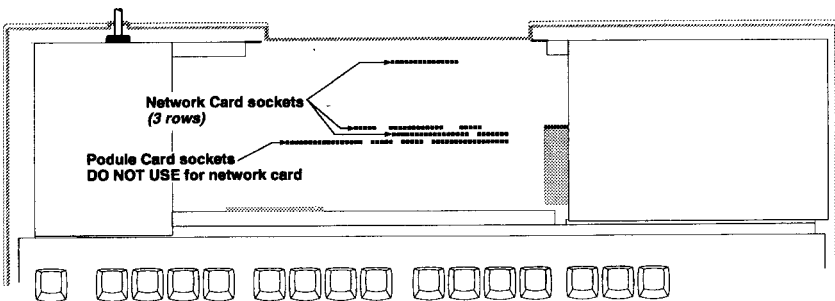


Figure 7: Sockets for A3020 /A4000 Nexus Interface (shown for A3020 — A4000 is similar)