Port Interface Card
Installation and Safety Guide

AT-AR020 PRI E1/T1
AT-AR021 (S) BRI-S/T
AT-AR021 (U) BRI-U
AT-AR022 ETH
AT-AR023 SYN
AT-AR024 ASYN4
AT-AR026 4ETH
AT-AR027 VoIP-FXS

Allied Telesis

Port Interface Card Installation and Safety Guide
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Package Contents

The following items are included with each Port Interface Card (PIC). Contact your authorised Allied Telesis distributor or reseller if any items are damaged or missing.

- Two spring-loaded retaining thumbscrews
- Two jumpers (AT-AR020 PRI E1/T1 and AT-AR021(S) BRI-S/T only).
- One *Port Interface Card Installation and Safety Guide*
- One warranty card

Choosing a PIC Bay

You can install a PIC into a PIC bay on your switch or router, or into an AR040 NSM. Use the available PIC bays on the switch or router base unit before installing any PICs into an AR040 NSM. When using an NSM, fill the NSM PIC bays starting at bay 0. For instructions on installing an AR040 NSM into your switch or router, read the *Network Service Module Installation and Safety Guide* supplied with the NSM.

Caution You cannot install PICs into an AT-AR040 NSM that has power applied to it. This includes NSMs that have been deactivated using the hot swap button, but not physically removed from the switch or router. To ensure that all power is removed from the NSM bay, you must either physically remove it from the switch or router (using the hot swap method), or disconnect all power sources to the switch or router.

You can install a maximum of two AT-AR020 PRI E1/T1 into an AR040 NSM. The maximum number you can install in your switch or router is four.

Caution You cannot install an AT-AR020 into an AR750S-DP that is powered by AC power supply units.

When using AT-AR027 PICs with an AR740 and AR745 router and NSM, you can install a maximum of four AT-AR027 PICs in the router and NSM.

Installing a PIC

This section describes the procedure for installing a PIC. Follow the same procedures, in particular the safety procedures and warnings, to replace or remove a PIC.

1. **Read the safety information.**

   For safety information, see the Installation and Safety Guide for your switch or router. A copy of this guide can be found on the CD-ROM that came with your switch or router, or at www.alliedtelesis.com/support/software/ .

2. **Gather the tools and equipment you will need.**

   A medium-sized flat-bladed screwdriver may be useful when loosening the PIC thumbscrews. You should also have any cables required for connecting the PIC to a wide area network or other network devices.

3. **Remove power to the switch or router.**

   Warning Do not install a PIC into an NSM bay or PIC bay base unit without first removing power from the switch or router. Be sure to disconnect both the main power supply and any attached redundant power supply. Installing a PIC with the switch or router powered ON can damage the PIC, NSM and base unit.

4. **Remove all TNV connections to existing PICs.**

   Warning Remove any cables attached to the external WAN ports of the AR020, AR021 and AR027 PICs, as these supply TNV into the switch or router. Dangerous voltages may be present on some parts of the board, even if the switch or router is powered OFF.

5. **Install the AR040 NSM if required.**

   Use the installation instructions in the *Network Service Module Installation and Safety Guide* to install an AR040 NSM.

6. **Remove the PIC-bay faceplate, NSM PIC-bay faceplate, or existing PIC.**

   Loosen the thumbscrews to remove the faceplate or PIC. Keep the faceplate for future use. If you remove the PIC, replace the faceplate to prevent dust and debris from entering the switch or router and to maintain proper airflow.

7. **Unpack the PIC.**

   In an antistatic environment, remove the PIC from its packing material. Be sure to observe ESD precautions.

⚠ **Warning** Do not attempt to install a PIC or any other expansion option without observing correct antistatic procedures. Failure to do so may damage the switch or router, PIC, or expansion option. If you are unsure what the correct procedures are, contact your authorised Allied Telesis distributor or reseller.

8. **If the PIC has jumpers, check they are correctly set.**

⚠ **Warning** Do not attempt to change any jumpers, DIP switches, or other hardware configurations while the switch or router is connected to a power supply, redundant power supply, or a 'live' network. Dangerous voltages may be present on some parts of the board, even if the switch or router is not turned on.

AT-AR020 PRI E1/T1 and AT-AR021(S) BRI-S/T PICs have user-configurable jumpers. Check all jumpers and other hardware configurations are set correctly on the new PIC (see Table 1 and Table 2).

AT-AR026 4ETH PICs have user-configurable links that set features such as auto-negotiation, buffer size, and MAC address aging. Descriptions of the links can be found in the *PIC Hardware Reference*.

Table 1: Functions of jumpers on the AT-AR020 PRI E1/T1 PIC board

Jumper	Function	Default
J1	Selects ISDN NT mode (installed, test only) or TE mode (not installed).	Not installed.
J2	Selects T1 mode (installed) or E1 mode (not installed).	Installed.

Earlier versions of the AT-AR020 PIC also have a J3 interface jumper. If present, this jumper must be installed for E1 mode and removed for T1 mode.

Table 2: Functions of jumpers on the AT-AR021(S) BRI S/T PIC board

Jumper	Function
J1	100Ω termination for TX.
J2	100Ω termination for RX.

For more information on PIC jumpers and hardware configurations, see the *Port Interface Card Hardware Reference*. This Reference can be found on the CD-ROM bundled with recently purchased switches or routers, or can be downloaded from www.alliedtelesis.co.uk/site/products/ .

9. **Slide the PIC into place.**

    PIC bays should be filled in numerical order, starting with the lowest available bay (e.g., bay 0) followed by bays with progressively higher numbers.

10. **Secure the PIC by tightening its thumbscrews.**

11. **Apply power to the switch or router.**

    Re-attach the power cord, and reconnect any redundant power supply.

12. **Test the PIC.**

    There are several ways to check the PIC is installed and functioning correctly.

    The **show system** command displays general system information about PICs and any other hardware installed, as well as memory, software version and patches loaded on the switch or router.

    See the *Port Interface Card Hardware Reference* for detailed information on PIC testing.

Setting the ISDN Territory

You must change the default ISDN territory to your region before you connect an ISDN PIC to your Telecommunications Network. Use the command:

```
set system territory={australia|china|europe|japan
    |korea|newzealand|usa}
```

In Australia only:

■   To use the Micro service, set the territory to **australia**.

■   To use the OnRamp service, set the territory to **europe**.

See the Software Reference provided with your switch or router for further information on configuring ISDN.

Downloading VoIP Firmware

The following instructions are for downloading the Voice over IP (VoIP) PIC firmware onto your PIC. The instructions assume you have successfully installed the VoIP PIC into your switch or router and made sure all the LEDs show as being on.

1. **Download the VoIP PIC firmware**

   Open your web browser and enter the URL www.alliedtelesis.co.uk. Navigate to the PIC's product information page and find the firmware files you need from the support page. You will need:

   - the boot code for the PIC
     This code is responsible for loading the protocol image onto the PIC

   - the SIP protocol image and/or the H.323 protocol image
     The protocol(s) you wish to run on PIC's installed in your switch or router.

   Download and save the firmware files you need to your TFTP server.

2. **Load the boot code onto your switch or router.**

   To load the boot code from your TFTP server, use the command:

   ```
   load method=tftp destination=flash server={hostname|ipadd}
       file=filename
   ```

3. **If possible, load the protocol image onto your switch or router.**

   If you have enough space, load the protocol image to the switch or router's flash, so that it does not need to be continually connected to an external TFTP server. Use the load command as described above.

4. **Set the boot code and protocol image.**

   To set the boot code on the switch or router, use the command:

   ```
   set voip bootcode=filename server={ipadd|flash}
   ```

   This command sets the boot code filename, and specifies the location of the protocol image that the boot code will load.

   To set the name of the protocol image (file), and specify what type of VoIP protocol the protocol image supports, use the command:

   ```
   set voip file=filename protocol={h323|sip} type={fxs|fxo}
   ```

5. **Set the interface for the VoIP traffic.**

   To set the preferred interface for VoIP traffic, use the command:

   ```
   set voip public interface=interface
   ```

   If a logical interface is not specified, 0 is assumed (that is, eth0 is equivalent to eth0-0).

6. **Load the protocol image onto the PIC or PICs.**

    To load the protocol image, use the command:

        enable voip protocol={h323|sip} [engine={*engine*}]

    The boot code loads the protocol onto all PICs unless you specify an individual PIC (engine). The engine name is formed by concatenating a VoIP interface type and an engine instance (for example, fxs2). A fully qualified engine name may also be specified (for example, bay0.fxs0 or nsm0.bay1.fxs0).

    Once the firmware is loaded, all the LEDs turn off. The figure below shows an example of the screen output of the firmware download process.

```
Manager> set voip boot=c-1-0-0.bin server=10.32.16.115
Info (1110003): Operation successful.
Manager> set voip fi=hs-1-0-0.bin protocol=h323
Info (1110003): Operation successful.
Manager> set voip public int=eth0
Info (1110003): Operation successful.
Manager> ena voip protocol=h323
Info (1110282): VoIP PIC BAY0:Firmware is loading...
Info (1110282): VoIP PIC BAY1:Firmware is loading...
Manager>
Info (1110293): VoIP PIC BAY0:Firmware successfully loaded.
Manager>
Info (1110293): VoIP PIC BAY0:Firmware is now running.
Manager>
Info (1110293): VoIP PIC BAY1:Firmware successfully loaded.
Manager>
Info (1110293): VoIP PIC BAY1:Firmware is now running.
```

Where To Find More Information

Sources of further information:

The *Port Interface Card Hardware Reference*, which provides detailed information on PICs. This Reference can be found on the CD-ROM bundled with recently purchased switches or routers, or at www.alliedtelesis.co.uk/site/products/ .

The installation guide or reference manual for your switch or router, which provides detailed information on the operational requirements of each switch, router, or network configuration.

Or go to www.alliedtelesis.com .