

Installation guide to the AT Distributed Clock”.

11-Sep-1998

This note is intended as a guide to the installation of your AT Distributed Clock MK-VI.

Before you power up your ATDC, please read this note as failure to set site specific information may disrupt other network users.

1.0. Getting started.

1.1 Install card into PC.

Install the ATDC's PCB into a vacant ISA slot on a suitable PC. The ATDC is set to I/O address 0x2300, and IRQ10.

Minimum PC requirements are:

1. 386DX-33 or faster processor*,
2. 4MB RAM
3. 3.5" FDD (configured as drive A:
4. NE2000 or compatible ethernet card, address 0x280 and IRQ5.
5. At least 1 spare back panel slot for the ATDC Bus', 9 pin D connectors.

* In applications where the clock is serving more than a few permanently connected TCP/IP clients, a 80486DX-33 is the recommended minimum.

1.2. Connection to stations fundamental signals.

Connect the stations 5MHz reference frequency of around 6 dBm to the top BNC connector. Connect the site's 1 Second tick (TTL) to the second top connector. **Both these signals are not internally terminated, so external termination is required for cable runs longer than a few metres.**

1.3. Configuring site specific information.

It is strongly recommended to configure the following site specific information to take effect at boot time. **If connecting to an ethernet network, the IP address must be configured at this point.**

Site specific information includes:

- i. Ethernet address and subnet mask,
- ii. Longitude, Site name and Timezone,
- iii. IERSA initialization file.

On the pSOS boot floppy disk, create an ASCII file called SYS_INIT.CMD. Any of the standard commands may be entered in this file. This file is executed at startup before any command shells and the ATDC operational program is started. In the following descriptions, "•" means at least one <SPACE>.

Ethernet address and subnet mask.

Command:

.ip • ww.xx.yy.xx • aa.bb.cc.ee

where:

ww.xx.yy.xx is the IP address in 'dot' notation, and
aa.bb.cc.ee is the subnet mask for the network in 'dot' notation.

Longitude, Site name and Timezone.

Command:

.site · Longitude · Site_name · Timezone

Where:

Longitude is the longitude in integer milliseconds of the site, +ve for east, and -ve for west. One hour (36,000,00mS) equals 15 degrees of longitude:

Units (longitude)	mS
1 degree	240,000.0
1 minute	4000.0
1 second	66.66.....

Site_name is an ASCII string of the site's name. Maximum length should not exceed 64 characters. This has no functional importance to the ATDC's operation.

and

Timezone is the timezone of the site, to the nearest 0.5 hours, +ve for east, and -ve for west.

IERSA initialization file.

Command:

.iersa · Filename

.iersa · a

where:

Filename is the path and file name of the default iersa configuration file.

The second command is complete in itself, and forces the application of the loaded IERSA file.

Example configuration file.

The following is a typical SYS_INIT.CMD configuration file for the ATNF site of Parkes, NSW, Australia. Copy and edit these lines for your site.

```
.ip 130.155.196.195 255.255.240.0
.site 35582800 Parkes 10.0
.ex 8.0/ier_init.cmd
.iersa a
```

You may also configure additional information such as Super User password etc. See the command manual for all these commands.

1.4 Building the boot disk.

If boot disks are not supplied, or have become corrupted or damaged in some way, it is necessary to build a boot disk. There are 2 steps; creating the boot sector and copying the ATDC program image onto the floppy disk.

1.4.1. Creating the boot sector.

Obtain a formatted 3.5" floppy disk. On a Windows 95, or Windows NT PC run the mkboot.exe program, interactively. Insert the floppy disk into drive a:. Follow the following sequence to the programs prompt (>) :

```
> a:  
> build  
> quit
```

You should now have a boot disk.

1.4.2. Copying the ATDC program image onto the floppy disk.

With the disk in the floppy disk drive (assume a:), copy the binary image to the floppy and rename that file to **psosboot.sys**. The latest images are available from the ATNF Electronics Group WWW page. Using a DOS window under WinNT, this may look like:

```
> copy atdc_release.abs a:\psosboot.sys
```

Alternatively the Windows Explorer may be used.

After the file has been copied, install the **sys_init.cmd** file onto the floppy as outlined above.

The boot disk is now ready to use.

2.0 Booting and Setting the ATDC.

2.1 With the PC's ethernet card connected to the network, boot the PC. The PC should be setup to boot from the 3.5" FDD. Booting should take about 30 seconds. If a screen is connected to the video card, then a twirling propeller will indicate the booting is progressing.

Once booting has completed various messages will be printed out as the ATDC comes alive. Real error messages may include the inability to start the ATDC, and/or no or invalid IP address. If the software is unable to start the ATDC, then a message indicating this will be displayed, and an attempt to restart the ATDC will occur every 2 seconds. If there is an error in the IP address then a fairly verbose message will be printed, and no ethernet connections shells will be started. In this case only one RS-232 connection is available.

If it is not intended to connect the ATDC to the ethernet then it is not necessary to configure the IP address and subnet mask at any time.

Once running, it is necessary to set the time of the ATDC, load the IERSA table and maybe zero the tick phase. All these commands can be done manually, however there are several programs available to run on VMS and/or UNIX such as "ATDC" which will considerably aid in this task. Only the set time command will be described here as it is the bare minimum that need to be done to get the ATDC functioning properly.

Consult the ATDC Command Language manual for full details.

To manually configure the clock, open a telnet session to it at port 4000:

```
> telnet atdc-name 4000 (for unix)
```

or

```
$ telnet atdc-name /port=4000 (for VMS UCX)
```

or connect an RS-232 terminal to COM2.

Once established, commands and data can be sent to and data returned from the ATDC.

To set the time use the .ST command:

```
.st dd mmm yyyy hh mm ss xx
```

where:

dd day of month,

mmm month of year (3 letter name)

yyyy year,

hh hours,

mm minutes,

ss seconds,

xx delta UT seconds.

For example

```
.st 27 jul 1998 13 45 50 31
```

The ATDC will be set to the above UTC 27-july-1998, 13hrs 45mins 50secs and dUTC 31 secs UTC.

If an ATDC display is required, an RS-232 terminal may be connected to COM1. Set terminal to 9600 baud 7 bits no parity. Hit <RET> at any time to re-initialize the display.

2.2. Restarting the ATDC from a hardware reset, or power shutdown.

When a power outage or a hardware reset has caused the ATDC to perform a cold restart, the IERSA information will be temporarily lost. This is due to the fact that the IERSA information held on the boot floppy is no longer of the same epoch as the time on the ATDC (the counters having been reset). If reloading the time and IERSA information from a central host is not possible, then manually set the time by opening a telnet session to the ATDC at port 4000, and issuing a .ST command (for the current time), then warm reboot the ATDC with the .RB command. With the ATDC's time compatible with the stored IERSA information, the latter will be loaded automatically.

3.0. Appendix.

3.1. .RB command.

For a full description see the ATDC command language manual. This information provided here is for convenience only.

.RB [**•**SU password]

Reboots the ATDC. SU password must be supplied or user must have enabled Super User privilege prior to executing this command.