



INDUSTRIAL COMPUTER SOURCE[®]

Model NTR1000-P Product Manual

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INDUSTRIAL COMPUTER SOURCE[®]



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FOREWARD

This product manual provides information to install, operate and or program the referenced product(s) manufactured or distributed by Industrial Computer Source. The following pages contain information regarding the warranty and repair policies.

Technical assistance is available at: **1-800-480-0044**.

Manual Errors, Omissions and Bugs: A "Bug Sheet" is included as the last page of this manual. Please use the "Bug Sheet" if you experience any problems with the manual that requires correction.

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Guarantee

A thirty day money-back guarantee is provided on all **standard** products sold. **Special order products** are covered by our Limited Warranty, *however they may not be returned for refund or credit. EPROMs, RAM, Flash EPROMs or other forms of solid electronic media are not returnable for credit - but for replacement only. Extended Warranty available. Consult factory.*

Refunds

In order to receive refund on a product purchase price, the product must not have been damaged by the customer or by the common carrier chosen by the customer to return the goods, and the product must be returned complete (meaning all manuals, software, cables, etc.) within 30 days of receipt and in as-new and resalable condition. The **Return Procedure** must be followed to assure prompt refund.

Restocking Charges

Product returned *after 30 days, and before 90 days*, of the purchase will be subject to a **minimum 20%** restocking charge and any charges for damaged or missing parts.

Products not returned within 90 days of purchase, or products which are not in as-new and resalable condition, are not eligible for credit return and will be returned to the customer.

Limited Warranty

One year limited warranty on all products sold with the exception of the "Performance Series" I/O products, which are warranted to the original purchaser, for as long as they own the product, subject to all other conditions below, including those regarding neglect, misuse and acts of God. Within one year of purchase, Industrial Computer Source will repair or replace, at our option, any defective product. At any time after one year, we will repair or replace, at our option, any defective "Performance Series" I/O product sold. This does not include products damaged in shipment, or damaged through customer neglect or misuse. Industrial Computer Source will service the warranty for all standard catalog products for the first year from the date of shipment. After the first year, for products not manufactured by Industrial Computer Source, the remainder of the manufacturer's warranty, if any, will be serviced by the manufacturer directly.

The **Return Procedure** must be followed to assure repair or replacement. Industrial Computer Source will normally return your replacement or repaired item via UPS Blue. *Overnight delivery or delivery via other carriers is available at additional charge.*

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Industrial Computer Source or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Industrial Computer Source or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the owners' manual.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever. Industrial Computer Source reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.



Shipments not in compliance with this Guarantee and Limited Warranty Return Policy will not be accepted by Industrial Computer Source.

Return Procedure

For any Limited Warranty or Guarantee return, please contact Industrial Computer Source's Customer Service at **1-800-480-0044** and obtain a Return Material Authorization (RMA) Number. All product(s) returned to Industrial Computer Source for service or credit **must** be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items **must** be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty **must** include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing date of purchase.

To reduce risk of damage, returns of product must be in an Industrial Computer Source shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Industrial Computer Source Customer Service at a nominal cost.

Limitation of Liability

In no event shall Industrial Computer Source be liable for any defect in hardware or software or loss or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Industrial Computer Source liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Industrial Computer Source or its authorized agent.

Some *Sales Items* and *Customized Systems* are **not** subject to the guarantee and limited warranty. However in these instances, any deviations will be disclosed prior to sales and noted in the original invoice. ***Industrial Computer Source reserves the right to refuse returns or credits on software or special order items.***

Advisories

Three types of advisories are used throughout the manual to stress important points or warn of potential hazards to the user or the system. They are the Note, the Caution, and the Warning. Following is an example of each type of advisory:

Note: The note is used to present information which may provide special instruction or extra information which may help to simplify the use of the product.



CAUTION!



A Caution is used to alert you of a situation which if ignored may cause injury or damage equipment.



WARNING!



A Warning is used to alert you of a situation which if ignored will cause serious injury.

Cautions and Warnings are accented with triangular symbols. The exclamation symbol is used in all cautions and warnings to help alert you to the important instructions. The lightning flash symbol is used on the left hand side of a caution or a warning if the advisory relates to the presence of voltage which may be of sufficient magnitude to cause electrical shock.

Use caution when servicing any electrical component. We have tried to identify the areas which may pose a Caution or Warning condition in this manual; however, Industrial Computer Source does not claim to have covered all situations which might require the use of a Caution or Warning.

You must refer to the documentation for any component you install into a computer system to insure proper precautions and procedures are followed.

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CE Declaration of Conformity

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Chapter 1: Introduction

Features

The NTR1000-P Network Time Reference Card is an accurate and stable clock for your PC. The NTR1000-P has an accuracy of ± 0.01 seconds and a stability of ± 10 seconds per month. Full battery back-up is provided to continue keeping accurate time when the PC is shut off or during sudden emergency loss of power.

The accuracy and stability are provided by a design based on the National Semiconductor Timer Clock Peripheral (TCP), DP8570A. Some of the features of the NTR1000-P include the following:

- Stability
- Accuracy
- Battery back-up
- Wide operating and storage temperature range
- Software selectable update rate
- Novell drivers
- CE Compliance

How to remain CE Compliant

This device complies with CE Directives 72/23/EEC and EMC 89/336/EEC. CE compliance is based on the interaction of all the components of a system. Any modifications made to the equipment may affect the CE compliance and must be approved in writing by Industrial Computer Source. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to claim CE compliance.

The Model NTR1000-P is designed to be CE Compliant when used in an CE compliant chassis. Maintaining CE Compliance also requires proper cabling and termination techniques. The user is advised to follow proper cabling techniques from sensor to interface to ensure a complete CE Compliant system. Industrial Computer Source does not offer engineering services for designing cabling or termination systems. Although Industrial Computer Source offers accessory cables and termination panels, it is the user's responsibility to ensure they are installed with proper shielding to maintain CE compliance.

Specifications

Accuracy

±0.01 seconds

Stability

±10 seconds per month

TCXO Stability

< 1 ppm

Aging Rate

3 ppm

Temperature Range

Operating	0 to 50° C
Storage	-10° to 70° C

Interrupt Levels

Extended AT Interrupts

Agency Approvals

CE Conformity with:

EU EMC Directive 89/336/EEC

EU Low Voltage Directive 72/23/EEC



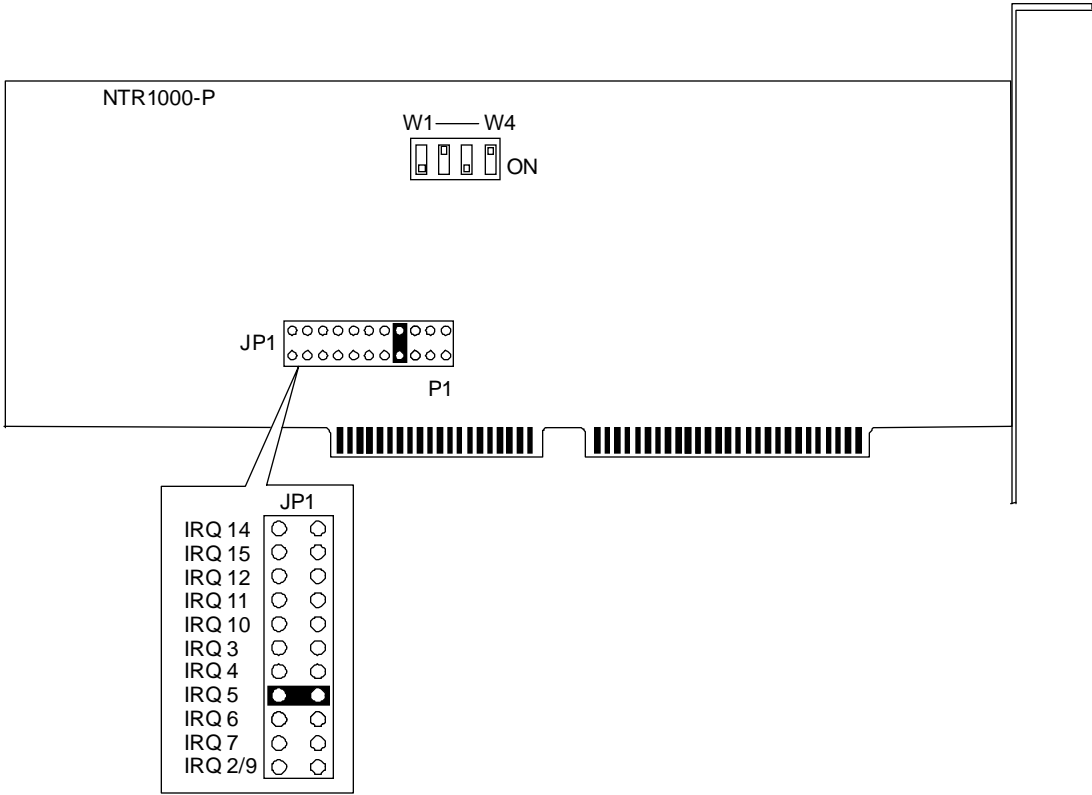


Figure 1-1: NTR1000-P Switch and Jumper Setting Drawing

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Chapter 2: Configuration

Hardware Configuration



CAUTION!



Do not try to adjust the clock frequency by adjusting C1. This is a factory adjustment only. If the clock does not keep time to ± 10 seconds per month, contact Industrial Computer Source for further information.

The NTR1000-P Network Time Reference card has a four position DIP switch for setting the board's address and an eleven position jumper for setting the IRQ level. The default port (I/O address) is 340H and the default IRQ is 5. Note that the loadable device driver settings must be changed if you change the board's default setting. Refer to the following section for software configuration information.

When setting the hardware address and the IRQ, make sure that they do not conflict with boards already installed in your computer. If two boards with the same address or IRQ are installed in the same machine, system conflicts will result and the system will not operate properly. The board uses 32 bytes of address space.

Refer to Table 2-1 for the hardware hex addresses and their settings on the DIP switch. Refer to Table 2-2 for the address lines, their binary and hex values, and the corresponding DIP switch settings. See Figure 1-1 for an example of how to set the IRQ jumper.

	W4(A8)	W3(A7)	W2(A6)	W1(A5)
200H	ON	ON	ON	ON
220H	ON	ON	ON	OFF
240H	ON	ON	OFF	ON
260H	ON	ON	OFF	OFF
280H	ON	OFF	ON	ON
2A0H	ON	OFF	ON	OFF
2C0H	ON	OFF	OFF	ON
2E0H	ON	OFF	OFF	OFF
300H	OFF	ON	ON	ON
320H	OFF	ON	ON	OFF
340H	OFF	ON	OFF	ON
360H	OFF	ON	OFF	OFF
380H	OFF	OFF	ON	ON
3A0H	OFF	OFF	ON	OFF
3C0H	OFF	OFF	OFF	ON
3E0H	OFF	OFF	OFF	OFF

Table 2-1: Address Settings

Address Line	A11	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
Binary Representation	0	0	1	0	0	0	0	0	0	0	0	0
Hex Representation	2			0				0				
Switch Label				W4	W3	W2	W1					
Switch Setting				ON	ON	ON	ON					

Table 2-2: Address Values and Switch Settings

Software Configuration for DOS

The NTR1000-P Network Time Reference Card software configuration is accomplished by means of a loadable driver that is on the disk that ships with the board. The device driver for the NTR1000-P Network Time Reference Card is called **NTR1000P.SYS**. Load this driver from the CONFIG.SYS file using the **DEVICE=** or the **DEVICEHIGH=** statements.

Note: It has been documented that a conflict arises between the NTR1000-P driver and the DOS program **VERIFY.EXE**. This conflict only occurs when using the **/D:** option of the NTR1000 device driver, and the DOS **VERIFY ON** command. It prevents the DOS **DATE** and **TIME** commands from properly accessing the NTR1000-P hardware registers to set the date or time. This combination should be avoided both at the DOS prompt as well as in your **AUTOEXEC.BAT**.

CONFIG.SYS File Syntax

```
DEVICE=d:\PATH\NTR1000P.SYS[/P:PORT][/U:UPDATMIN][/H:UPDATEHR][/I:IRQ][/C:][/D:]
```

[/P:PORT]	NTR1000-P Board Base Address in hex (200 to 3E0 on 20H increments)
[/U:UPDATMIN]	Update rate in minutes (Range 1 - 59 minutes)
[/H:UPDATEHR]	Update rate in hours (Range 1 - 1000 hours)
[/I:IRQ]	NTR1000-P Board Interrupt Jumper Settings
[/C:]	Will update both CMOS and DOS time and date according to the update rate setting. Use SETDATE and SETTIME commands to set up the boards.
[/D:]	Will cause the NTR1000 driver to take over all DOS Date/Time calls (both Read and Write). Using this option requires using DATE and TIME instead of SETDATE and SETTIME to access the NTR1000-P board.

System Software Default

The system default settings are as follows.

PORT is set to 340 (hexadecimal).

IRQLEVEL is set to 5 (IRQ 5).

UPDATMIN is set to 1 (1 minute between updates).

Initial Setup

After you have installed the board and the driver (refer to the sections above for information on configuring the hardware and the driver), reboot your computer to initialize the board. There will be an "RTC" oscillator failure the first time you power up the board. This is normal, it will not occur again once the board has been initialized with the correct date and time. Finally, set the date and time using the DOS **DATE** and **TIME** functions, or the **SETTIME** and **SETDATE** commands.

Example

In the following example, the NTR1000-P driver is configured to use port 220H, IRQ11 and provides an update rate of once every 24 hours.

```
DEVICEHIGH=C:\NTR1000P\NTR1000P.SYS /P:220 /I:11 /H:24
```

The statement causes DOS to load the driver high with the following settings.

PORT is set to 220 (hexadecimal).

IRQLEVEL is set to IRQ11.

UPDATEHR is set to 24 hours

Note that if you don't use the default settings you must also change the board settings. If they don't match, the board won't work correctly. In the above example, the NTR1000-P Network Time Reference board settings for the DIP switch would have to be set to W4 - ON, W3 - ON, W2 - ON and W1 - OFF in order to select 220H. Refer to Table 2-1 for the addresses and their switch settings. In addition, the jumper would have to be set from pin 7 to pin 8 in order to select IRQ11. Refer to Table 2-2 for the IRQs and their jumper settings.

Setting the Date and Time

There are two ways to set the date and time on the NTR1000-P Network Time Reference Card.

When using the /D: driver option, simply use the DOS **DATE** and **TIME** commands. Remember to specify AM or PM when setting the time.

When using the /C: option, use the **SETTIME** and **SETDATE** utilities - shipped on the NTR1000-P diskette - to set the date and time.

Check your DOS manual for more information or command SYNTAX.

Verifying Operation

A utility program called **DOSCLK.EXE** is provided on this distribution disk. This program allows you to verify that the NTR1000-P Network Time Reference card is working correctly. To use the **DOSCLK.EXE** program, type **DOSCLK** at the DOS prompt and press the Enter key (remember to change to the subdirectory or to the distribution diskette containing the **DOSCLK.EXE** program before trying to start the application). If you have changed the address of the NTR1000-P to something other than the default (340H), use the command **DOSCLK XXX**. (Replace the XXX with your new hex address).

Two timers will appear on the screen in separate windows. One is the DOS clock and the other is the NTR1000-P clock. The DOSCLK application causes the DOS clock to run twice as fast as normal, this ensures that the two clocks will not have the same time when the update is performed. This program updates the DOS clock every 10 seconds. When the DOS clock is updated, both clocks should show the same time. This application allows you to verify that the NTR1000-P card is updating the DOS clock. If it isn't updating the DOS clock, check your address and IRQ settings. Be sure you have no system conflicts and make sure the driver is installing without errors.

NTR1000-P Driver for Windows 95

This driver allows Windows 95 to keep accurate time by updating its internal clock with the time provided by the NTR1000-P card. The update interval can be specified between one minute and 49 days. These updates should have no significant impact on Windows 95 performance. The driver package consists of three parts, a Win95 VXD driver, a helper application similar to an NT service, and a control panel applet. The applet is for setting the time, date, and update interval. Once the driver is installed, system time must be set via the NTR1000-P control panel applet. If the time is set via the normal Windows NT time setting applet, the time will be overwritten by the NTR1000-P service at the next update interval.

Note: There is an API in Win32 specifically for synchronizing the system time with a time source on the network. Do not use any software that uses this API on the computer with the NTR1000-P driver running. The NTR1000-P service will overwrite the time at each update interval. Since your NTR1000-P equipped PC will most likely be the source for network time, this should not be a problem.

Note About Hardware Installation

Because the driver operates in a polled fashion, the interrupt of the NTR1000-P is not used. The NTR1000-P jumper for interrupt selection should be removed to prevent spurious interrupts from crashing your PC.

Installing the Windows 95 NTR1000-P Driver

From the Start Menu, select Settings->Control Panel.

From the Control Panel, select Add New Hardware.



Click the Next button.



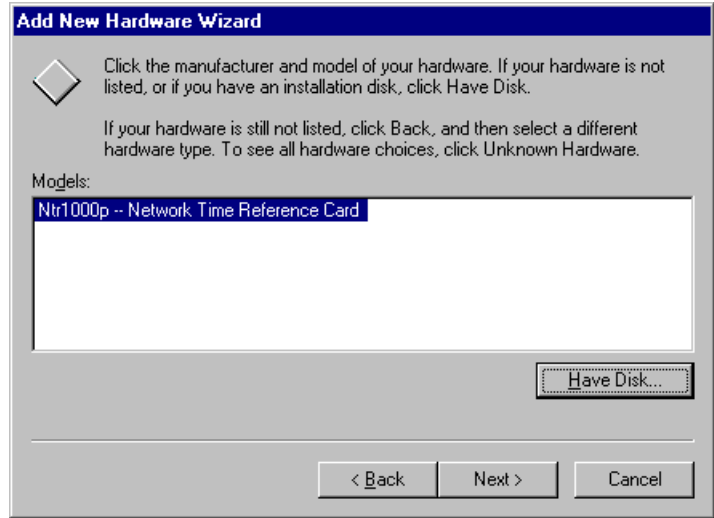
Answer “No” to the question, “Do you want Windows to search for you new hardware?”
Press the Next button.



Scroll the hardware types list down and select the “System devices” type. Press the Next button.



Press the Have Disk button.
 Insert your disk labeled “NTR1000-P Driver Disk.”
 Make sure “A:\” is selected as the source.
 Press OK.



The model “NTR1000-P – Network Time Reference Card” should be selected in the Models box.

Press the Next button.



Note the port address range Windows 95 selected for you. If this is not the port address that the NTR1000-P card is set for (via dip switches), you will need to correct this on a later screen (see below).

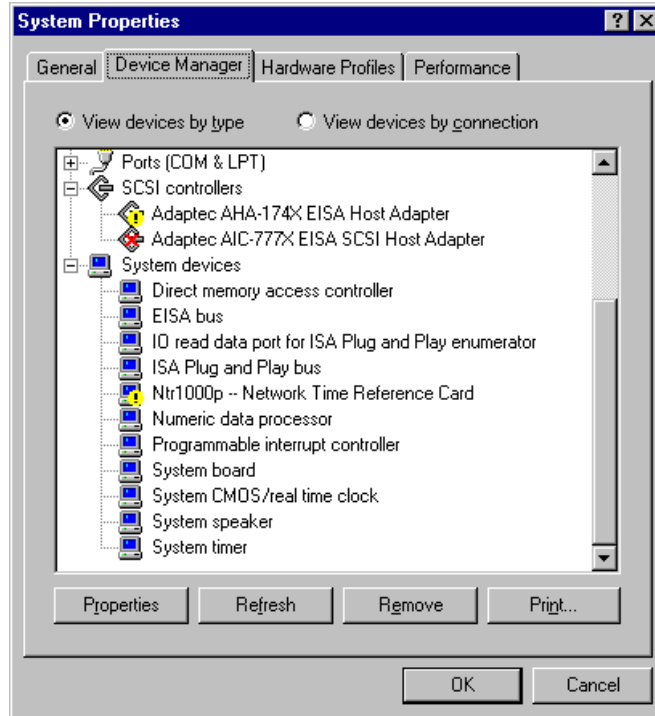
Press the Next button.

Windows 95 will copy the driver’s files onto your system.

Press the Finish button.

At this point, Windows 95 will prompt you to shutdown your machine. If the port address Windows 95 selected for you was correct, proceed to reboot your machine. Otherwise, follow these directions:

From the Control Panel, select the System icon.

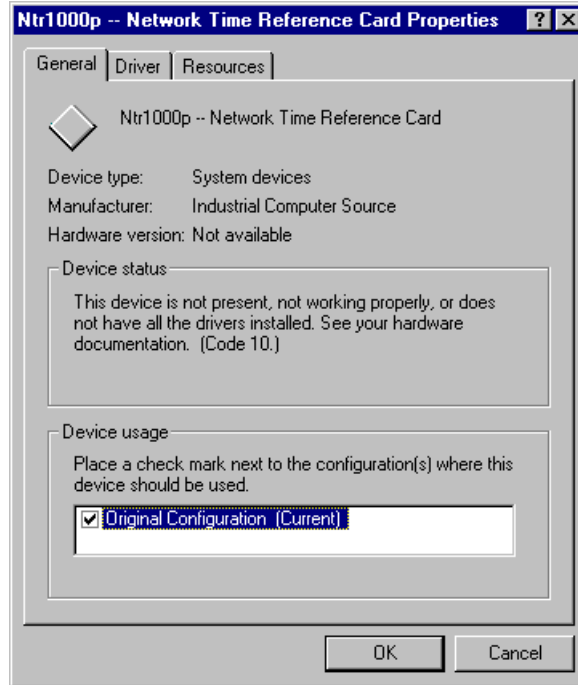


Press the “Device Manager” tab.

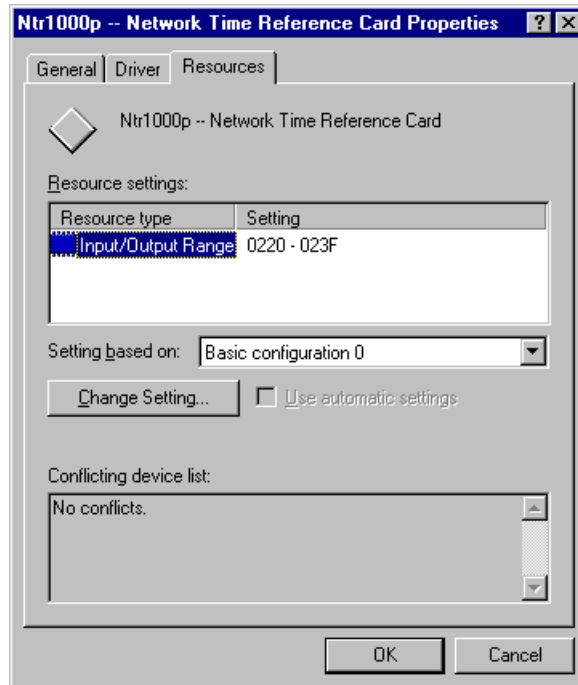
Scroll down to the “System devices” type. Click on the “+” symbol on the left if the type isn’t already expanded.

Find the “NTR1000-P – Network Time Reference Card” item. If the port address was in fact wrong, there should be a small yellow exclamation point next to this item.

Select the item, then press Properties.

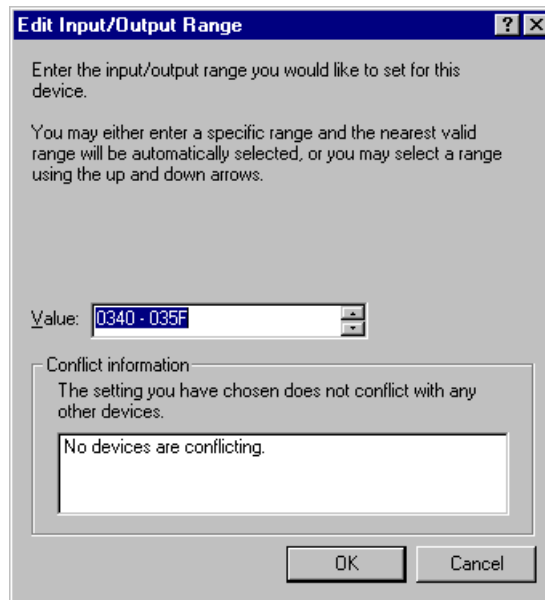


Note that “Device Status” shows the device is not working properly. Press the “Resources” tab.



Note that the I/O port setting to the right of “Input/Output Range” is incorrect.

Press the “Change Setting...” button.



Use the up/down arrows to select the correct value for your NTR1000-P board.

Verify in the conflict information window that no devices are conflicting. If there are other devices at the same port address as your NTR1000-P board, you will have to either change the setting on your NTR1000-P or that of the other hardware..

Press OK.

Press OK.

Press Done.

Answer Yes when asked if you wish to restart your machine.

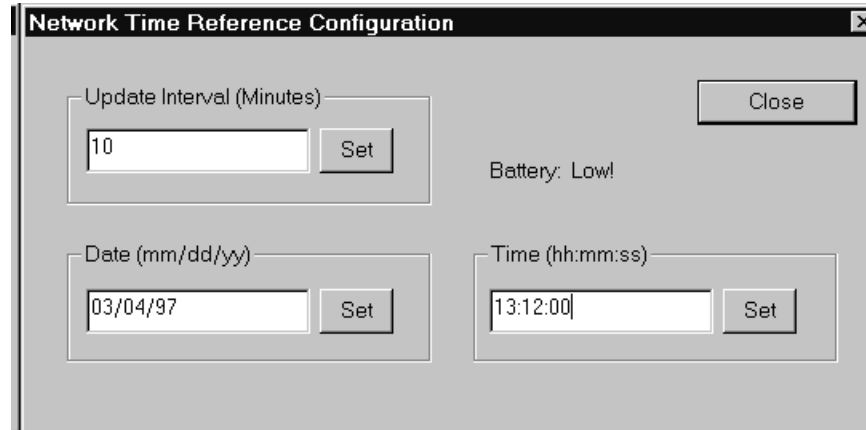
Setting NTR1000-P Time

System time must be set via the NTR1000-P control panel applet. Time set with the standard system tool will be overwritten at the next update interval.

From the Start Menu, select Settings->Control Panel.



Double-click on the NTR1000-P config icon. The NTR1000-P Config dialog looks like this:



To set the update interval, enter a new value (in minutes) into the Update Interval edit box, and press the Set button.

To set the date, enter the date (mm/dd/yy) into the Date edit box, and press the Set button.

To set the time, enter the time (hh:mm:ss, or hh:mm) in 24 hour format into the Time edit box, and press the Set button.

Installation for Windows NT

This driver allows Windows NT to keep accurate time by updating its internal clock with the time provided by the NTR1000-P card. The update interval can be specified between one minute and 49 days. These updates should have no significant impact on Windows NT performance. The driver package consists of three parts, an NT kernel mode driver, an NT service, and a control panel applet. The applet is for setting the time, date, and update interval. Once the driver is installed, system time must be set via the NTR1000-P control panel applet. If the time is set via the normal Windows NT time setting applet, the time will be overwritten by the NTR1000-P service at the next update interval.

Note: There is an API in Win32 specifically for synchronizing the system time with a time source on the network. Do not use any software that uses this API on the computer with this driver running. The NTR1000-P service will overwrite the time at each update interval. Since your NTR1000-P equipped PC will most likely be the source for network time, this should not be a problem.

Note About Hardware Installation

Because the driver operates in a polled fashion, the interrupt of the NTR1000-P is not used. The jumper for interrupt selection should be removed to prevent spurious interrupts from crashing your PC.

Installing the Windows NT NTR1000-P Driver

Under Windows NT 3.51:

- From the Program Manager, click on File->Run.
- Type a:\setup and press OK.

From Windows NT 4.0

- From the Start Menu, select Run.
- Type a:\setup and press OK.

The InstallShield installer will initialize and run. Follow the on-screen instructions. You will need to provide two pieces of information:

- The destination path for the driver files.
- The NTR1000-P I/O port address.

When the files are transferred, you will be asked if you want to reboot the computer. The drivers will not work until after a reboot.

Setting NTR1000-P Time

System time must be set via the NTR1000-P control panel applet. Time set with the standard system tool will be overwritten at the next update interval.

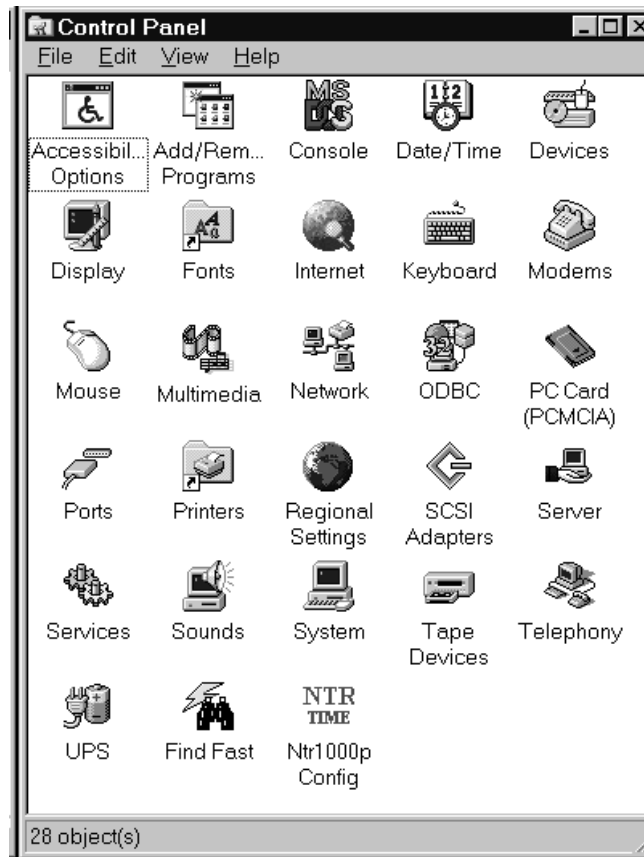
Under Windows NT 3.51:

- From the Program Manager, run the Control Panel from the Main group.

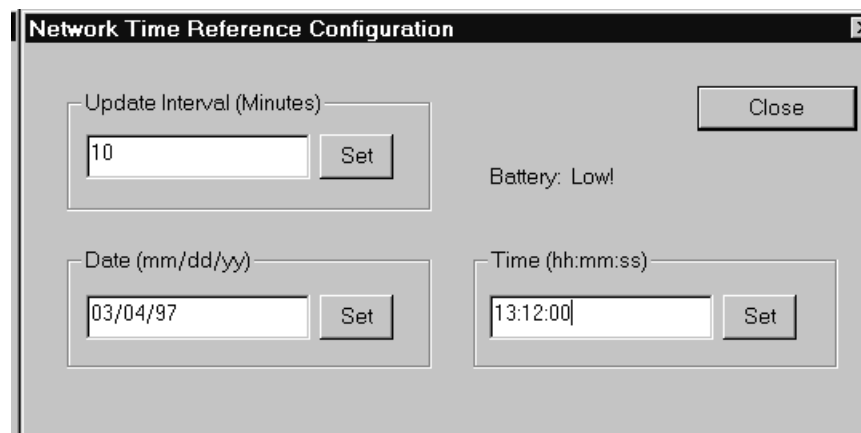
From Windows NT 4.0

- From the Start Menu, select Settings->Control Panel.

Below is an example of what the control panel will look like. Under NT 3.51, the control panel looks slightly different:



Double-click on the NTR1000-P config applet. The NTR1000-P Config dialog looks like this:



To set the update interval, enter a new value (in minutes) into the Update Interval edit box, and press the Set button.

To set the date, enter the date (mm/dd/yy) into the Date edit box, and press the Set button.

To set the time, enter the time (hh:mm:ss, or hh:mm) in 24 hour format into the Time edit box, and press the Set button.

Installation in a Novell Server

A driver is included that will allow the NRT1000-P to be used in a Novell environment to provide accurate time in the server. As a client logs on, the client PC is updated with the correct time. This driver is compatible with Netware versions 3.12 and 4.01 - 4.10

The necessary file is titled **NTR.NLM**. This file must be copied to the server's **SYS:SYSTEM** directory from another workstation. When the server has been started, at the server prompt, enter the following command:

```
Load ntr.nlm port=xxxx /d:mm/dd/yy /t:hh:mm:ss /u:mm / h:hhh
```

xxxx NTR1000-P base port address
 mm month (1-12)
 dd day (1-31)
 yy year (95 is 1995, 79 is 2079)
 hh hours (0-23)
 mm minutes (0-59)
 ss seconds (0-59)
 u:mm update minutes (1-59)
 h:hhh update hours (1-999)

Note: The /u and /h options may be specified together, and the total time of both becomes the update period.

The load statement can also be included in the AUTOEXEC.NCF file. If you decide to unload the driver, you must first modify the AUTOEXEC.NCF file (if the load statement is included) and then re-boot the system.

Once the time and date have been specified, when the NLM is loaded, it is not necessary to specify them again, as they will be retrieved from the clock card.

It is not recommended that the update time be set at less than 10 minutes. The NetWare console gets a message everytime the server time is changed.

Error Messages

The following messages may be displayed on the server console screen if an error should occur:

```
NTR1000P: Card not responding at selected port address
NTR1000P: Card functions disabled
```

This message is displayed when the card stops responding after the driver has been operating successfully with the card.

```
NTR1000P: Oscillator Failure - check date and time!
```

```
NTR1000P: Card functions disabled
```

This message is displayed when the card stops responding after the driver has been operating successfully with the card.

```
NTR1000P: Warning - Battery is Low!
```

This message is displayed when the card's battery level becomes low after the driver has been operating successfully with the card.

```
NTR1000P: Resource Tag allocation failure!
```

```
Module initialization failed.
```

```
Module NTR.NLM NOT loaded
```

The server does not have enough memory to function properly.

```
NTR1000P: CLIB version too old!
```

```
Module initialization failed.
```

```
Module NTR.NLM NOT loaded
```

The version of CLIB.NLM loaded on the server is not recent enough. Obtain a current version from Novell and copy it to the SYS:SYSTEM directory. The server must be shut down in order to load the newer version of CLIB.

```
NTR1000P: Port usage conflict!
```

```
Module initialization failed.
```

```
Module NTR.NLM
```

The operator has designated a port address which is already in use in the server.

```
NTR1000P: Card not responding at selected port address!
```

```
Module initialization failed.
```

```
Module NTR.NLM NOT loaded
```

The server did not "see" the card at the specified address.

```
NTR1000P: Oscillator Failure - check date and time!
```

```
NTR1000P: Battery is Low!
```

```
Module initialization failed
```

```
Module NTR:NLM NOT loaded
```

The driver was not loaded because the battery level is already indicated as being low.

```
NTR1000P: Invalid command line options/syntax!  
syntax:  load ntr.nlm port=xxx /d:mm/dd/yy /t:hh:mm:ss /u:mm /h:hhh  
        where: /d=date,/t=time(24-hr),/u=update minutes, /h-update hours  
              if port is omitted, operator will be prompted  
              if /d or /t is omitted, values come from card  
              if /u and /h omitted, default is 10 minutes  
Module initialization failed.  
Module NTR.NLM NOT loaded
```

The operator did not follow the syntax as indicated above. Please note that once the correct date and time is established in the NTR1000-P card, it is only necessary to enter one of the following:

load ntr	prompts for port, uses default update every 10 minutes, takes existing time and date from card.
load ntr port=340	uses default update, every 10 minutes, takes existing time and date from card
load ntr port=340 /u:20	specified update every 20 minutes, takes existing time and date from card
load ntr port=340 /h:1	specified update every hour, takes existing time and date from card

Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)



6260 Sequence Drive
San Diego, CA 92121-4371
(800) 523-2320

declares, that the product:

NTR1000-P

to which this declaration relates, meets the essential health and safety requirements and is in conformity with the relevant EU Directives listed below:

EU EMC Directive 89/336/EEC
EU Low Voltage Directive 72/23/EEC

using the relevant section of the following EU standards and other normative documents:

EN 50081-1:1992 Emissions, Generic Requirements.

-EN 55022 Measurement of radio interference characteristics of information technology equipment.

EN 50082-2:1995 Immunity, Generic Requirements.

-EN 61000-4-2 Immunity to Electrostatic Discharge.

-ENV 50140 Immunity for radiated RF electromagnetic fields.

EN 50082-1:1992 Immunity, Generic Requirements.

-IEC 801-3:1984 Immunity for radiated electromagnetic fields.

-IEC 801-4:1988 Immunity for AC and I/O lines, fast transient common mode.

-IEC 65A/77B Immunity for AC lines, transients, common, and differential mode.

EN 60950:1992 Safety of Information Technology Equipment.

Mr. Steven R. Peltier
President & Chief Executive Officer

September 17, 1997
San Diego, CA

Information supporting this declaration is contained in the applicable Technical Construction file available from:



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16, Avenue du Québec
B.P. 712
Villebon-Sur-Yvette
91961 COURTABOEUF Cedex

BUG REPORT

While we have tried to assure this manual is error free, it is a fact of life that works of man have errors. We request you to detail any errors you find on this BUG REPORT and return it to us. We will correct the errors/problems and send you a new manual as soon as available. Please return to:



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Product: **NTR1000-P**

Manual Revision: **00431-051-7B**

Please list the page numbers and errors found. Thank you!

