

# **NetLink Configuration Utility Help**

**© 2015 Kepware, Inc.**

# Table of Contents

<b>Table of Contents</b> .....	<b>2</b>
NetLink Configuration Utility Help .....	3
<b>Index</b> .....	<b>17</b>

## NetLink Configuration Utility Help

---

Help version 5.001

### CONTENTS

#### [Overview](#)

What is the NetLink Configuration Utility?

#### [Getting Started](#)

How do I use the NetLink Configuration Utility?

#### [Troubleshooting](#)

What if something isn't what I expect?

#### [Error Codes](#)

What are the messages generated by the utility?

## Overview

---

The NetLink device is a gateway from Ethernet to S7 MPI, in bus connector format. The NetLink Configuration Utility application provides:

- Identification of NetLink devices on the local network
- Temporary IP address download
- Ethernet parameter (including permanent IP address) and bus parameter download
- Firmware download

## Navigation

The following **Device** menu items are available in the NetLink Configuration Utility.

Operation	Description	Link
<b>Refresh List</b>	Scan local network for NetLink devices	<a href="#">Refresh List</a>
<b>Set Temporary IP</b>	Set temporary IP address for subsequent downloads of Parameter Settings and Firmware.	<a href="#">Set Temporary IP Address</a>
<b>Parameter Settings</b>	Download NetLink Parameter Settings (i.e. Permanent IP Address, MPI Baud Rate)	<a href="#">Parameter Settings</a>
<b>Firmware</b>	Update NetLink firmware	<a href="#">Firmware</a>

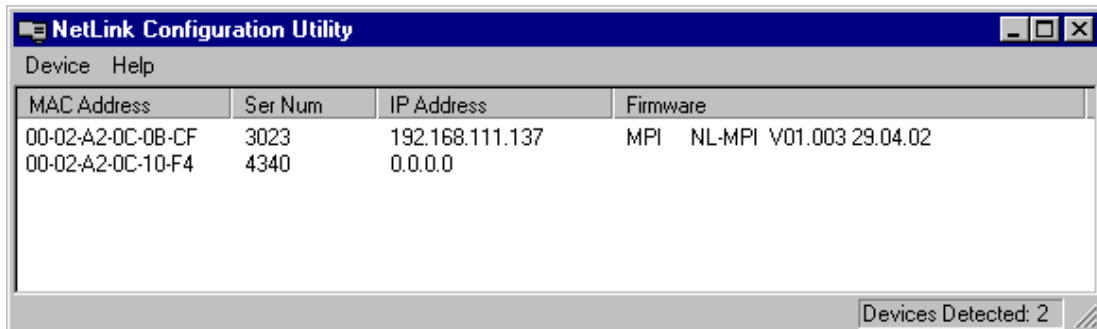
## Getting Started

### Quick Start Tutorial

This tutorial assumes an standard third-party NetLink device with factory default settings. It also assumes the NetLink is loaded with the latest firmware. *To upgrade firmware, see [Firmware](#).*

This tutorial provides instructions for scanning the network for NetLink devices, setting a temporary IP address, and downloading parameter settings to the device (including a permanent IP address).

1. Select **Device | Refresh List**. This cause a scans of the local network for NetLink devices.

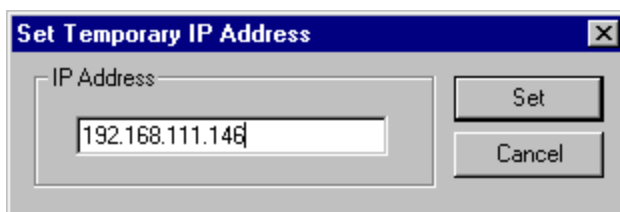


2. In the main window, review the list of NetLink devices detected. The view contains four columns: MAC Address (hardware address), Serial Number (factory assigned), IP Address (configurable), Firmware string containing device type, firmware revision, and firmware date. (configurable) (see [Refresh List](#) for details).
3. Select **Device | Set Temporary IP**. Standard NetLink uses 0.0.0.0 for a default IP address. Before parameter settings, including a permanent IP address, can be downloaded to the NetLink, a temporary IP address must be assigned.

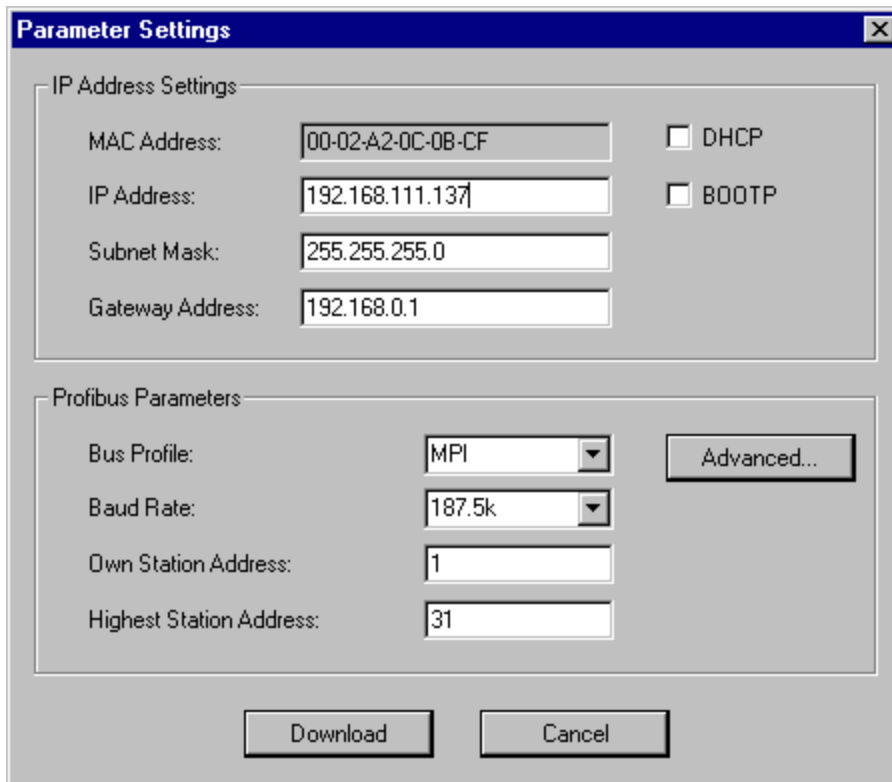
**Note:** There is a three-minute window for setting a temporary IP address after power on. If it is not set in that time, NetLink responds with error code -1.

4. In the next dialog, enter a temporary IP address and click **Set**.

**Tip:** Use the same IP address that will be permanently saved later for the temporary IP address (see [Set Temporary IP Address](#)).



5. Select **Device | Parameter Settings** to define how communications take place from the PC to the NetLink and from the NetLink to the PLC.
6. In the [Parameter Settings](#) dialog, enter the permanent IP Address, subnet mask, and gateway (if applicable; if not, leave the field empty). If the Profibus Parameters need to be altered, click [Advanced...](#)
7. Click **Download** to start the transfer.

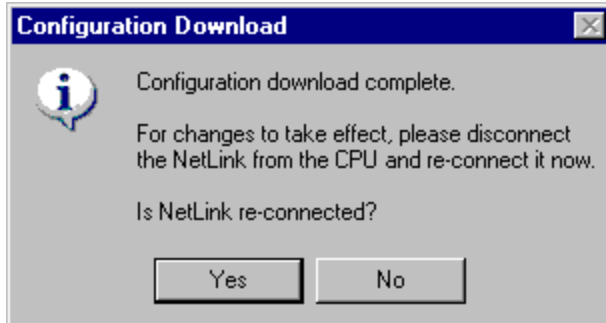


The **Parameter Settings** dialog box is divided into two sections:

- IP Address Settings:** Contains text boxes for MAC Address (00-02-A2-0C-0B-CF), IP Address (192.168.111.137), Subnet Mask (255.255.255.0), and Gateway Address (192.168.0.1). To the right are checkboxes for  DHCP and  BOOTP.
- Profibus Parameters:** Contains dropdown menus for Bus Profile (MPI) and Baud Rate (187.5k), and text boxes for Own Station Address (1) and Highest Station Address (31). An **Advanced...** button is located to the right of the Bus Profile dropdown.

At the bottom of the dialog are **Download** and **Cancel** buttons.

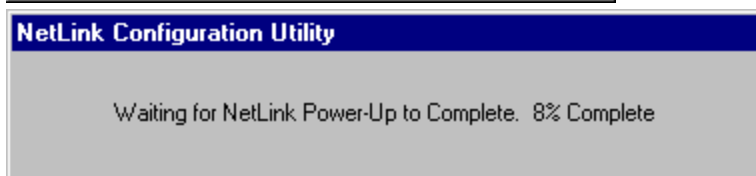
- When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC. Click **Yes** when the NetLink is reconnected.



The **Configuration Download** dialog box displays an information icon and the following text:

Configuration download complete.  
For changes to take effect, please disconnect the NetLink from the CPU and re-connect it now.  
Is NetLink re-connected?

Buttons for **Yes** and **No** are provided at the bottom.



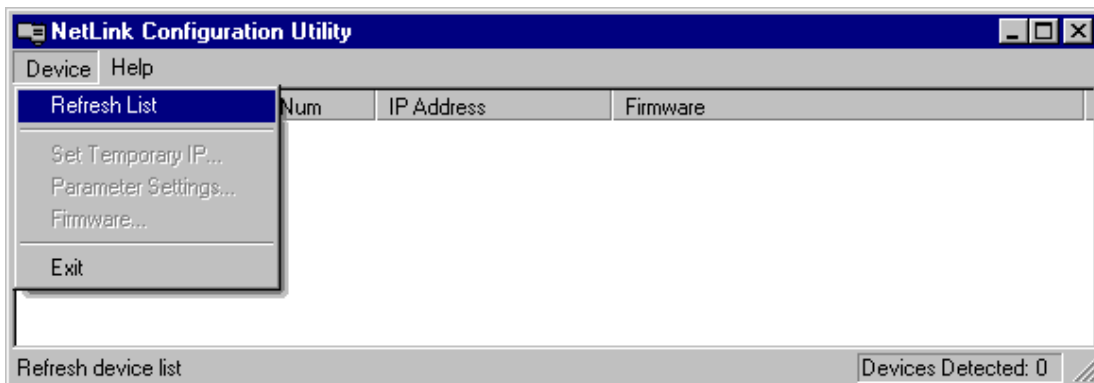
The **NetLink Configuration Utility** progress bar shows the status: **Waiting for NetLink Power-Up to Complete. 8% Complete**

- The parameter settings have successfully downloaded to the NetLink

See Also [Parameter Settings](#).

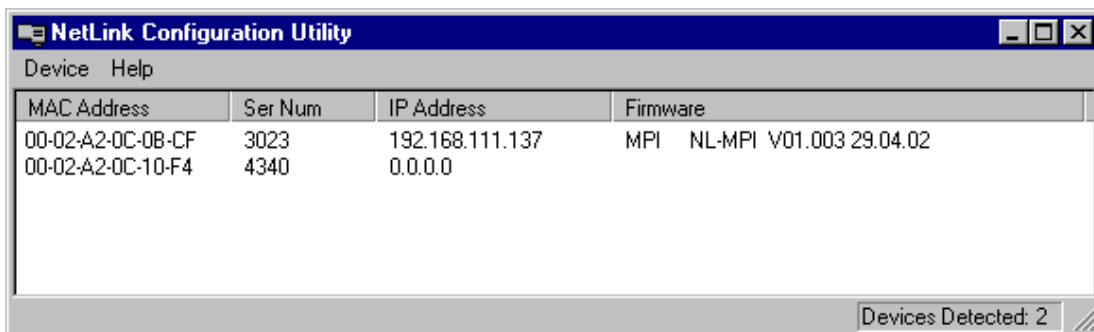
## Refresh List

To scan for NetLink devices on the local network, select **Device | Refresh List**.



The main window displays a list of all NetLink devices detected. The view contains four columns:

- MAC Address (hardware address)
- Serial Number (factory assigned)
- IP Address (configurable)
- Firmware string containing device type, firmware revision, and firmware date. (configurable)



If a known NetLink is not in the list, disconnect and reconnect this NetLink, wait about 10 seconds and then perform another Refresh List.

To begin any Configuration or Firmware operation with the device, an IP Address must be assigned to that device.

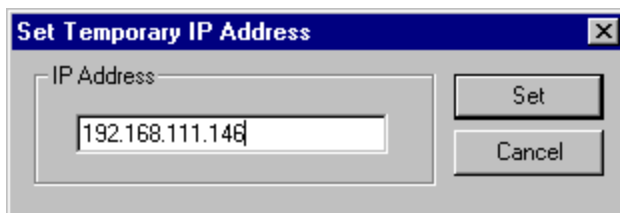
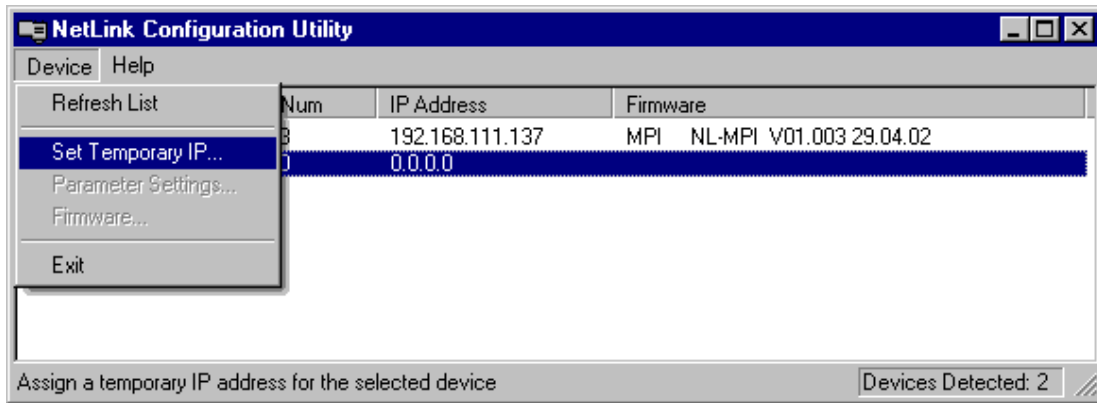
## Set Temporary IP Address

To set a temporary IP Address:

1. Disconnect and reconnect the NetLink from the PLC.

**Note:** There is a three-minute window for setting a temporary IP address after power on. If it is not set, the NetLink responds with error code -1.

2. Select the NetLink from the list.
3. From the menu, select **Device | Set Temporary IP...**

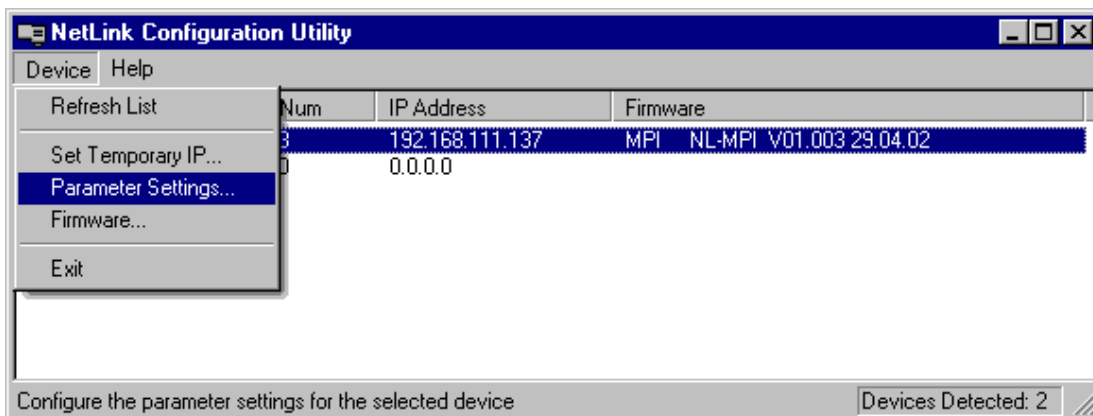


4. Enter a valid IP address and click **Set**. The temporary IP address is downloaded to RAM.

**Note:** If the NetLink is disconnected, the temporary IP address is lost.

5. Once a temporary IP address is assigned, [Firmware](#) and [Parameter Settings](#) can be downloaded to the NetLink.

## Parameter Settings



Select a link below:

### [Parameter Descriptions](#)

Description of each parameter

### [Advanced Profibus Parameter Descriptions](#)

Description of each advanced Profibus parameter

### [Parameter Download](#)

Description of the download process for parameter settings

## Parameter Descriptions

**Important:** With the exception of MAC address and IP address, the default parameter values do not necessarily indicate current device settings. Settings are write-only and are not read from the device.

**Parameter Settings**

IP Address Settings

MAC Address: 00-02-A2-0C-0B-CF  DHCP

IP Address: 192.168.111.137  BOOTP

Subnet Mask: 255.255.255.0

Gateway Address: 192.168.0.1

Profibus Parameters

Bus Profile: MPI

Baud Rate: 187.5k

Own Station Address: 1

Highest Station Address: 31

### IP Address Settings

There are three ways the NetLink can be assigned IP parameters:

- DHCP (dynamic) - the device gets IP parameters from a DHCP server.
- BOOTP (dynamic) - the device gets IP parameters from a BOOTP server.
- Static - the device used IP parameters: IP address, subnet mask, and gateway address. If a parameter does not apply, leave the field empty.

If more than one method is chosen, the NetLink tries each one, in the order listed above, until one succeeds.

### Profibus Parameters

#### Bus Profile

The bus profile presets the parameter values to best match the given bus. For example, MPI defaults at 187.5K baud whereas Profibus defaults at 1.5M baud. Changing the bus profile affects the following parameters:

- Baud Rate
- Slot Time
- Minimum Station Delay
- Maximum Station Delay



- Quiet Time
- Setup Time
- Target Rotation Time
- GAP Factor
- Max Retry

### Baud Rate

Baud rates available are:

9600  
19.2K  
93.75K  
187.5K  
500K  
1.5M  
3M  
6M  
12M

### Own Station Address

Station address for the NetLink  
Value Range: 0 ... 125  
Default: 1

### Highest Station Address

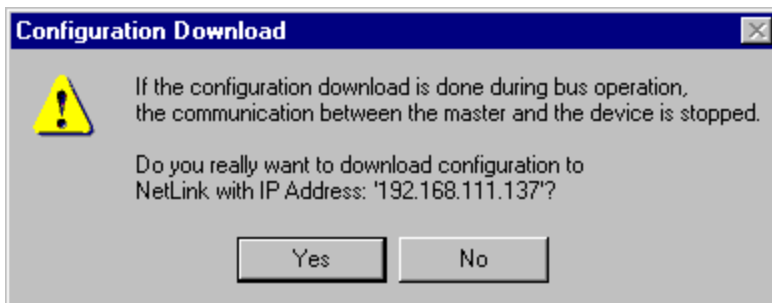
Station address of the highest active station  
Value range: 2 ... 126  
Default: 31

See Also: [Advanced Profibus Parameter Descriptions](#)

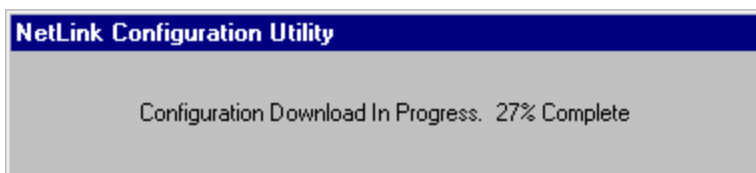
## Parameter Download

---

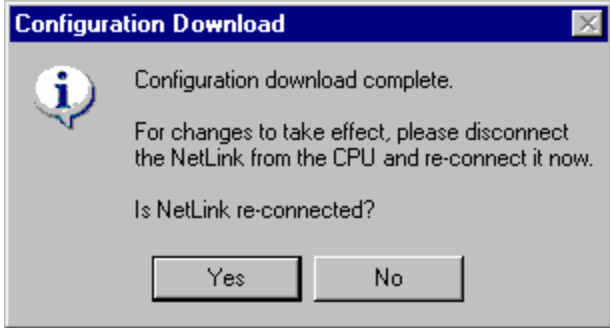
When the **Download** button is selected in the Parameter Settings dialog, a warning is displayed.



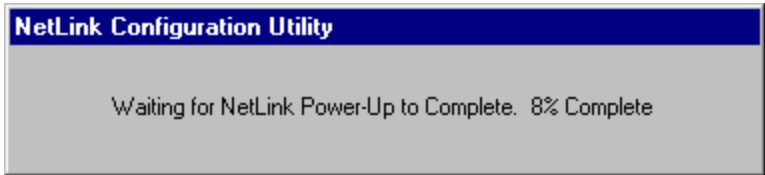
Click **Yes** to perform the download or **No** to cancel. Once the download is in process, a progress percentage is displayed.



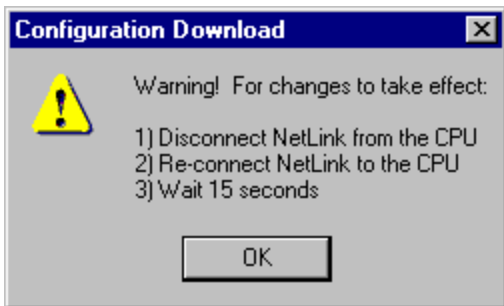
When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC.



It is necessary to reconnect the device for this new configuration to be used. Click **Yes** when the NetLink is reconnected. The NetLink Configuration Utility pauses to allow the NetLink to complete its power-up sequence.



If the **No** button is selected, a warning will be displayed. It is necessary to reconnect the device for this new configuration to be used. Otherwise the previous configuration remains active.



## Advanced Profibus Parameter Descriptions

**Important:** The default parameter values do not necessarily indicate current Device Settings. Settings are write-only and are not read from the device.

Calculated Timing		
Bit Time (tBit):	5.33333	us
TID1:	60	tBit
TID2:	400	tBit
Target Rotation Time:	53.3333	ms

Configure Timing		
Slot Time (TSL):	415	tBit
Min. Station Delay of Responders (min TSDR):	60	tBit
Max. Station Delay of Responders (max TSDR):	400	tBit
Quiet Time (TQUI):	1	tBit
Setup Time (TSET):	1	tBit
Target Rotation Time (TTR):	10000	tBit
GAP Actualization Factor (G):	20	
Max. Retry Limit:	2	

### Calculated Timing

#### Bit Time

The time it takes to transmit 1 bit.  
 Bit Time = 1/Baud Rate.

#### TID1 and TID2

The time the sender must wait, after receiving the last character of a telegram, before it can send the next telegram.

TID1 (tBit) starts after sender receives an acknowledgment / response.

TID2 (tBit) starts after the sender has sent an unacknowledged telegram.

#### Target Rotation Time (ms)

Nominal token cycling time in milliseconds.

### Configure Timing

#### Slot Time

Time Sender waits for acknowledgment / response before retrying.  
 Value Range: 37 ... 16383

Default: 415 (MPI), 300 (PROFIBUS)

**Minimum Station Delay of Responders**

Minimum time period that must elapse before the responder may send an acknowledgment/response.

Value Range: 1 ... 65535

Default: 60 (MPI), 11 (PROFIBUS)

**Maximum Station Delay of Responders**

Maximum time period that must elapse before the sender may send next telegram.

Value Range: 1 ... 65535

Default: 400 (MPI), 150 (PROFIBUS)

**Quiet Time**

Time delay for modulators/repeaters to switch from sending to receiving.

Value Range: 0 ... 127

Default: 1 (MPI), 0 (PROFIBUS)

**Setup Time**

Time sender must wait between receiving an acknowledgment / response and sending next telegram.

Value Range: 1 ... 255

Default: 1 (MPI), 1 (PROFIBUS)

**Target Rotation Time**

Pre-set nominal token cycling time.

Value Range: 1 ... 16777215

Default: 10000 (MPI), 2021 (PROFIBUS)

**GAP Actualization Factor**

Number of token cycles before additional stations can be accepted into the token ring.

Value Range: 1 ... 100

Default: 20 (MPI), 10 (PROFIBUS)

**Maximum Retry Limit**

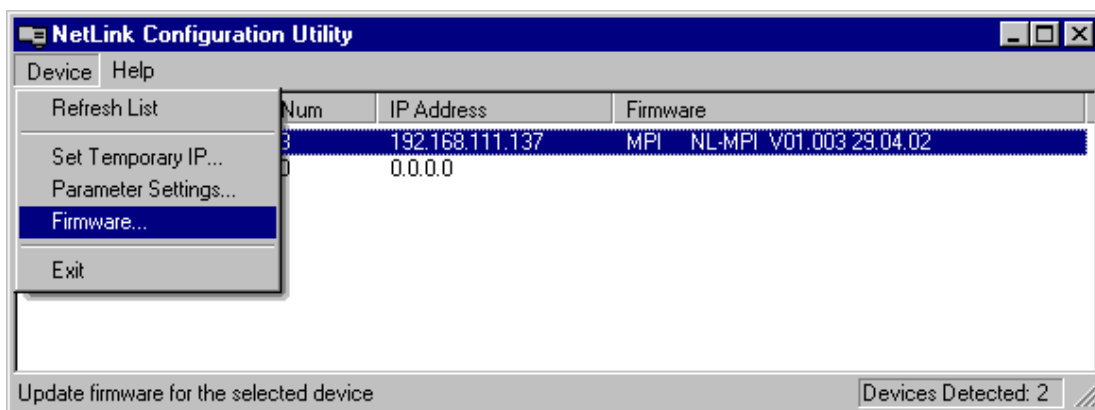
Maximum number of attempts a sender will re-send a telegram.

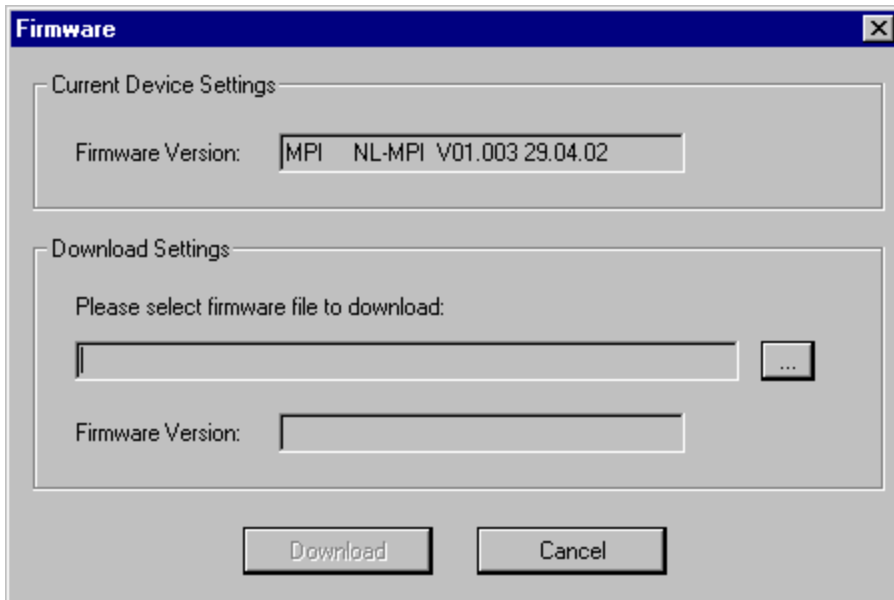
Value Range: 1 ... 15

Default: 2 (MPI), 1 (PROFIBUS)

**Firmware**

To update NetLink firmware, select **Device | Firmware**.





### Current Device Settings

#### Firmware Version

NetLink's current firmware revision. Firmware string syntax is <Type> <Version> <Date>. For NetLink devices, the <Type> is always NL-MPI. The NetLink Configuration only supports devices of <Type> NL-MPI.


### Download Settings

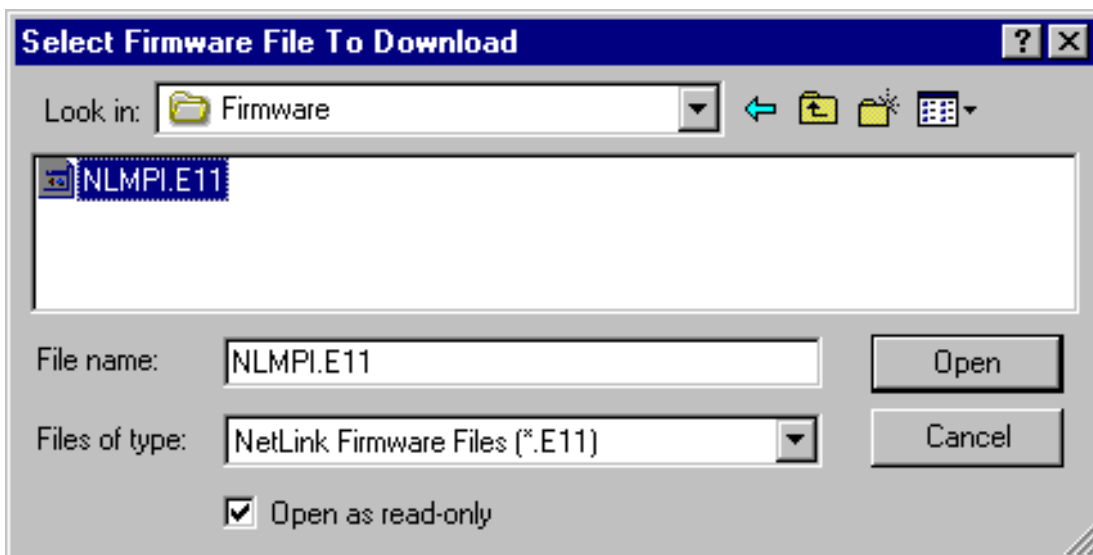
#### Selected Firmware

The name of the firmware file to download. File is selected via the browse (...) button.

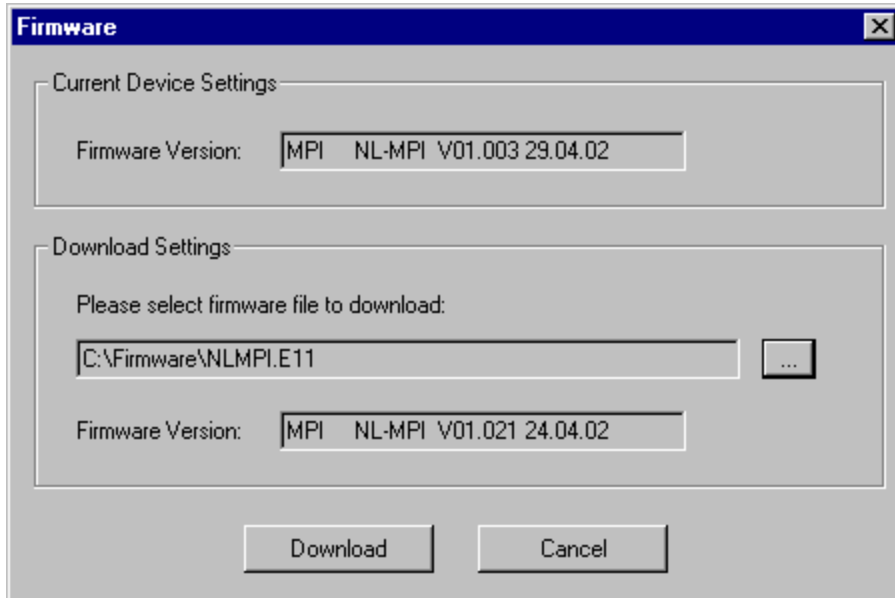
#### Firmware Version

Firmware revision of the selected firmware file to download. The firmware string follows the same syntax as the current firmware version.

Click the  button to locate available firmware files. The following dialog appears.

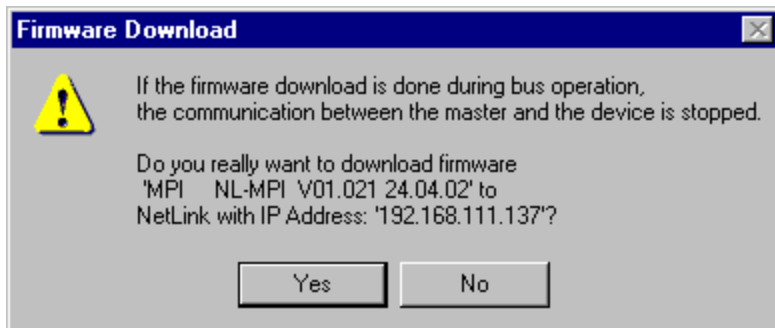


NetLink firmware files have a file extension of ".E11." Once a file is selected, click the **Open** button to accept the selection.

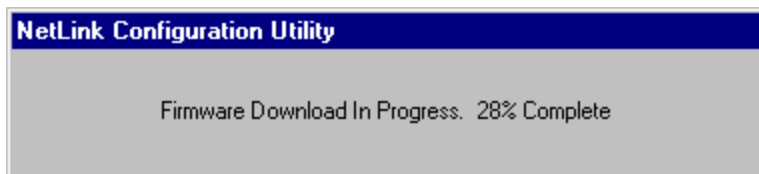


With a firmware file selected, a comparison can be drawn between the current firmware version and the selected firmware version.

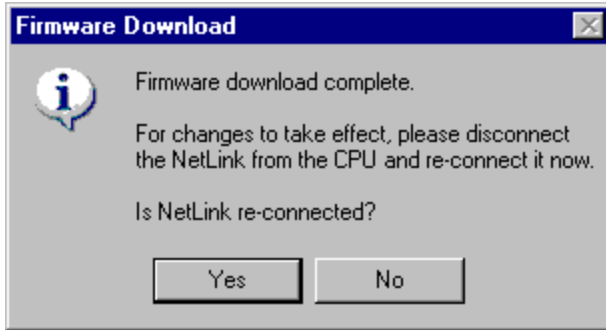
Click the **Download** button to download the selected firmware.



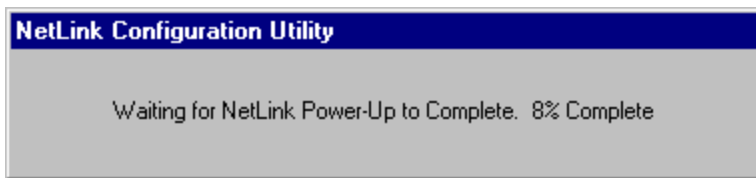
Click **Yes** to perform the download or **No** to cancel. During the download process, a progress percentage displayed.



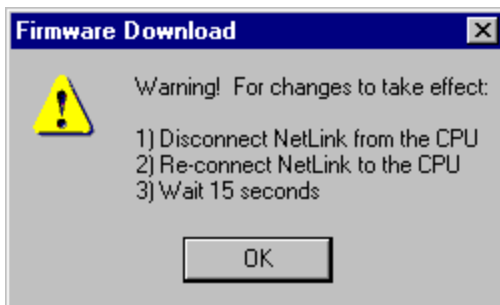
When the download process completes, a dialog appears prompting to disconnect and reconnect the NetLink from the PLC.



It is necessary to reconnect the device for the new firmware to be used. Click **Yes** when the NetLink is reconnected. The NetLink Configuration Utility pauses to allow the NetLink to complete its power-up sequence.



If the **No** button is selected, a warning is displayed. It is necessary to reconnect the device for the new firmware to be used. Otherwise, the previous firmware remains active.



## Troubleshooting

---

### NetLink is detected in the list, but cannot download configuration parameters or firmware.

If the IP address displayed in the list is 0.0.0.0, [set a temporary IP Address](#).

If the IP address displayed in the list is NOT 0.0.0.0, verify that the IP address is valid for the local network. An IP address may have been downloaded (i.e. See "Parameter Download" on page 9) that does not meet the local network's subnet mask.

#### See Also:

[Set a Temporary IP Address](#)

[Set a Permanent IP Address](#)

[Download the Parameter Settings](#)

## Error Codes

---

The following table describes possible error codes presented by the NetLink Configuration Utility.

Error Code	Source	Description
-10	Remote Station	Dual port RAM not accessible
-11	Remote Station	Not ready
-12	Remote Station	Not running
-13	Remote Station	Watchdog test failed
-14	Remote Station	Signals wrong OS version
-15	Remote Station	Error in Dual Port flags
-16	Remote Station	Send mailbox is full
-17	Remote Station	PutMessage timeout
-18	Remote Station	GetMessage timeout
-19	Remote Station	No message available
-20	Remote Station	Reset command timeout
-21	Remote Station	COM-flag not set
-22	Remote Station	IO data exchange failed
-23	Remote Station	IO data exchange timeout
-24	Remote Station	IO data mode unknown
-25	Remote Station	Function call failed
-26	Remote Station	DPM size differs from configuration
-27	Remote Station	State mode unknown
-28	Remote Station	Output port already in use
-100	Host	File not opened
-101	Host	File size zero
-102	Host	Not enough memory to load file
-103	Host	File read failed
-104	Host	File type invalid
-105	Host	File name invalid

If a the device reports an error during configuration or firmware download, a value of 1000 is added to the error number.



# Index

## A

Advanced Profibus Parameter 11

## B

Baud Rate 9

## C

Calculated Timing 11

Contents 3

## E

Error Codes 16

## F

Firmware 12

## G

GAP Actualization Factor 12

Getting Started 4

## H

Help Contents 3

## I

IP Address 8

## M

MAC Address 6

**N**

Navigation 3

**O**

Overview 3

**P**

Parameter Descriptions 8

Parameter Download 9

**Q**

Quiet Time 12

**R**

Refresh List 6

Remote Station 16

**S**

Station Address 9

Station Delay 12

**T**

Target Rotation 11

Temporary IP Address 7

Troubleshooting 16